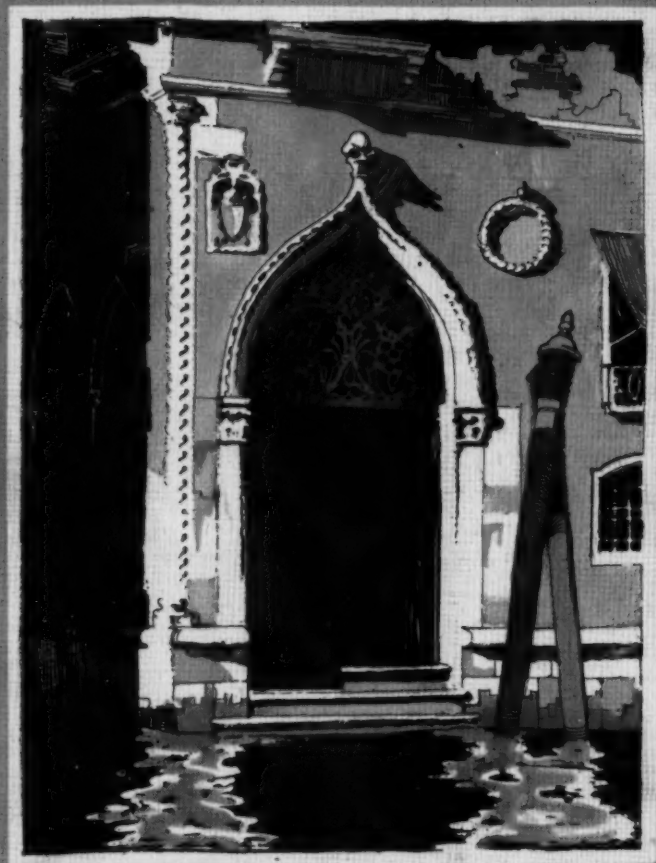


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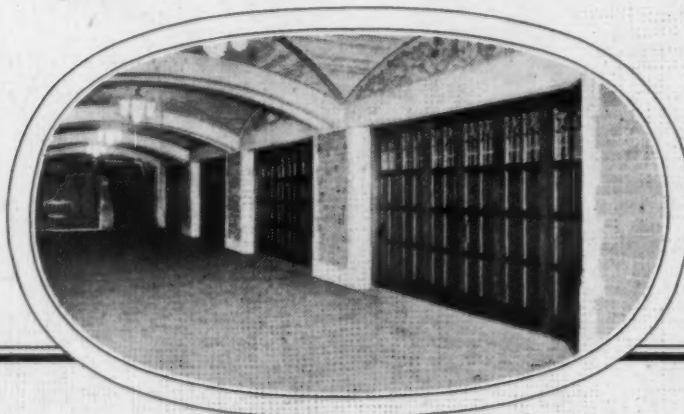
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The ARCHITECTURAL FORUM

VOLUME XLVII

Established 1892

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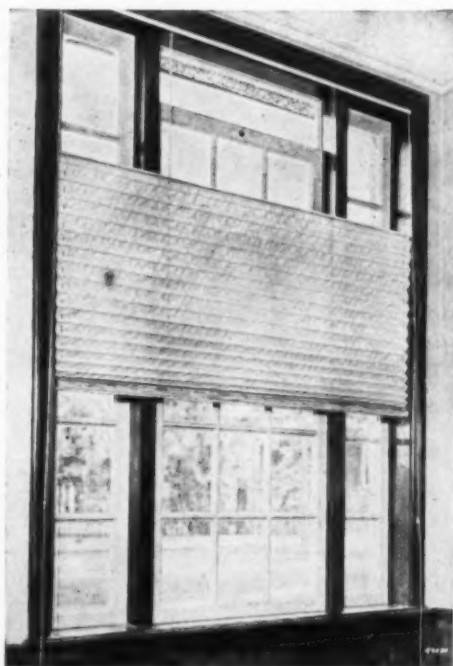
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THE EDITOR'S FORUM

EXCAVATIONS IN ATHENS

DURING October a number of New York newspapers made announcement of an undertaking of considerable interest and importance to American archaeologists. Thus *The New York Times*: "Acting on behalf of an anonymous American philanthropist, Colonel Arthur Woods, former Police Commissioner of New York, has, it was learned recently, furnished funds to the American School for Classical Studies at Athens to begin in the heart of classic Athens the most ambitious and costly archaeological enterprise ever undertaken. "The American School for Archaeological Studies at Athens has obtained from the Greek government concessions, which are now under examination by lawyers in this city, granting the right to dig up the 25-acre site of the Agora, or market place, which was in ancient times covered with temples, libraries and other public edifices and full of artistic treasures described by classic writers. Great buildings were erected there by Greek and non-Greek rulers, from Pericles to Hadrian. The project to dig this most promising of all sites of antiquity has been agitated for a century and is now for the first time nearing realization. Professor Edward Capps of Princeton University, who conducted the negotiations with the Greek government which resulted in the concessions, has been planning to raise \$2,500,000 to carry out the project, in a 20-year period or longer, by calling for financial help from all the great universities of the country and from previous liberal supporters of American archaeological work in Greece, including John D. Rockefeller, Jr., J. P. Morgan, Thomas L. Chadbourne, the Carnegie Corporation, and others."

A FOURTH ANNUAL SALON

AT the Marshall Field Picture Galleries, Chicago, there will be held from January 28 to February 15, 1928 the fourth annual exhibition sponsored by the "Hoosier Salon." The exhibition will be open to the work of "any artist born in Indiana, any artist who has lived in Indiana for a period of five years or more, or who is identified with a group of Indiana artists and who returns to that state for periodical sketching trips." A number of cash prizes have been offered, and the Indiana Limestone Company offers a prize of \$200 for "the best piece of carved limestone which shows creative design and which can be embodied in an architectural design either exterior or interior." The Executive Secretary, in charge of the arrangement of the exhibition, to whom application for entries should be made, is Mrs. C. B. King, 113 North Homan Boulevard, Chicago.

GERMAN BRICKWORK

EARLY in November there was opened in New York an exhibition of photographs illustrating the skillful use of brick which has long been made in Germany. The photographs are of brickwork of both the mediæval and the modern periods, and give an excellent idea of the possibilities inherent in a material which has done so much to render German architecture interesting and distinguished. Later on these photographs, which form a "traveling exhibit," are to be placed on view in Cleveland and Detroit, and possibly in Boston, Hartford, Philadelphia, St. Louis, Cincinnati, St. Paul, Denver, San Francisco, Los Angeles, and probably in other cities, eventually becoming part of the working equipment of some American school of architecture, which will be selected later.

A RECENT SYMPOSIUM ON CHURCH ARCHITECTURE

THE Conference of Church Bureaus and Departments of Architecture and the Home Missions Council of the Protestant Churches held lately in Chicago a two-day's conference on church architecture. The conference was attended by a considerable number of architects, clergymen, denominational officers and others. Addresses were given by Professor Watson of the University of Illinois on acoustics, and by Dr. Von Ogden Vogt on art and religion. Other addresses were on church organs, stained glass, financial methods, promoting building campaigns, etc. The addresses were followed by discussion, and an interesting letter from Ralph Adams Cram on architectural education was read. Stereopticon views of many modern churches and floor plans were shown during the two-days' session.

The matter of securing well trained architects who are intelligent as to the architectural history of the Christian Church and who are sympathetic with the ideals and objectives of the Church was discussed at length, the churchmen claiming that the architectural colleges are giving little recognition to the needs of the modern Protestant Church, though some give attention to problems of chapels for millionaires' estates, circular or octagon chapels, and synagogues. The situation was rather sharply criticised in view of the apparent utter lack of sympathy on the part of the colleges with the Gothic, and also from the fact that one Protestant body alone spent \$20,000,000 on new church construction in 1926. The obtuseness of church committees came in for a good share of criticism by the churchmen, it being claimed that the taste of the people is improving, and that the churches realize better what they need to provide for.



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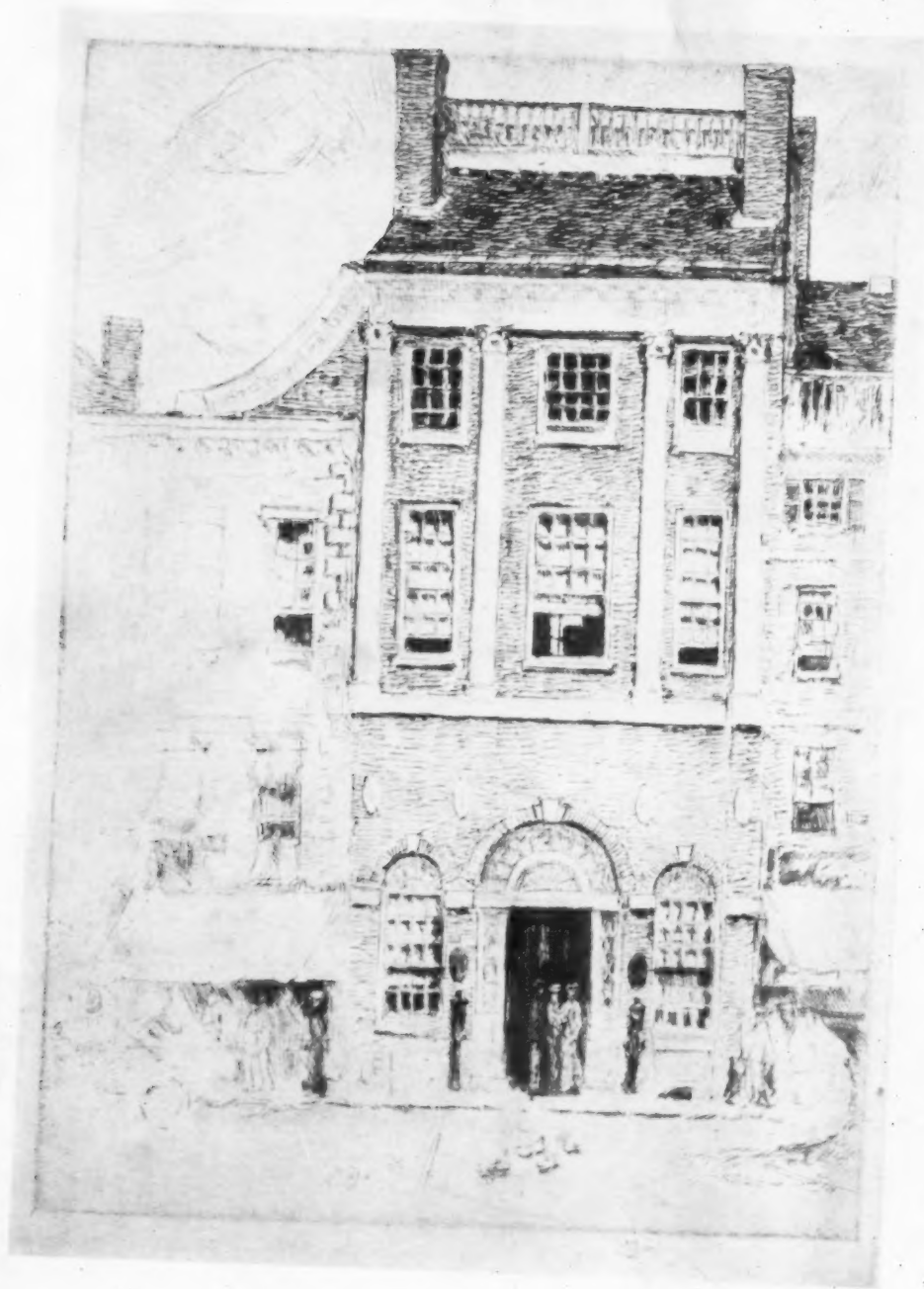
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The ARCHITECTURAL FORUM

Volume XLVII

DECEMBER 1927

Number 6

✓ Library Planning

By EDWARD L. TILTON

LIBRARIES are not exempt from the operation of the universal law of evolution, under which organisms develop from the simple to the complex. Fifty years ago a library was a book dormitory, where the librarian slept with his tomes, seldom disturbed by the public; today it is a center of multifarious activities. In earlier days a person would go miles for a book; today it must be within effortless reach. The modern librarian advertises his wares like a merchant and strives to excel other libraries in the registration of readers and in book circulation. The degree of service depends largely upon location, the size of the community, and upon the abilities of those in control, seconded by a properly arranged building, planned to accommodate readers and books economically and yet attractively.

Site. To facilitate such service the library should be easily accessible to the expected clientele. In a small town, where one building suffices, it may well be placed on a side street near the shopping center. A large city requires branch libraries to bring the books within reach of every home. The lot should admit of having ample light and air. A site sloping from front to rear benefits the basement and facilitates service. Many factors control the choice of a site, but the matter of cost usually dominates. The bibliophile or dilettante might prefer a shaded and befountained park, but business men, on the average library board, visualize the world through their pocket-books, and the economical site generally wins!

Determination of Size. The site determined, it is necessary to calculate the dimensions and proportions of the building. The architect should study the librarian's requirements and convert the data furnished into a proper solution of the problem, to do which requires time and experience. He should estimate the size of building possible for the appropriation or, *vice versa*, compute the amount of money necessary to construct and equip a suitable building, a structure appropriate to its surroundings.

The design of a library involves the hygienic accommodation of the greatest number of readers; the housing of the maximum number of books; and the architectural expression of the building's purpose. With a given appropriation, it is necessary first to

estimate the size and quality of the structure before developing the plans. Building costs vary in different sections of the country, but an average, which will include all items, may be struck on this basis:

General construction, exclusive of metal stacks	57 per cent	
Plumbing, heating, electric wiring and fixtures....	13 per cent	70 per cent
Metal stacks, wood shelving and equipment.....		20 per cent
Architect's fees and allowance for contingencies....		10 per cent

100 per cent

Assuming an appropriation of \$300,000, 70 per cent would be \$210,000. Dividing this by cubic foot cost of say 50 cents, gives 420,000 as the cubic foot limitation. The height of the building, to include basement and two stories, would approximate 42 feet, which divided into 420,000 yields 10,000 square feet as the ground area of the structure. With the appropriation of \$300,000 we should endeavor to house 300,000 volumes and to accommodate 300 readers simultaneously seated, allowing 30 square feet per chair, which would require 9,000 square feet total floor area in the various reading, reference, children's periodical, club and similar rooms. The 300,000 volumes may be apportioned 250,000 to the stacks and 50,000 to shelving throughout the various reading rooms. Five stories (each of 7½ feet) of stacks may be contained in the height of the building, allotting to each story one-fifth of the 250,000 volumes or 50,000, which divided by 20, the average number of volumes per square foot of stack space, seven shelves high, gives as a resultant, 2,500 square feet as the ground area probably necessary for the stacks.

Rather than carry the stacks vertically through the building, it is better, where possible, to arrange two or three tiers of stacks below the first floor. For two such stories the 250,000 volumes would require 6,250 square feet, and for three stories, 4,166 square feet. This arrangement has given satisfaction in the libraries at Wilmington, Del., and Highland Park, Detroit; (Plates 105 and 98) in the Knight Memorial at Providence (page 501), and elsewhere. Such

stacks can be kept in the darker central part of the basement (which is better for books than sunlight), thus giving the lighter portions of the basement to work rooms, for which good lighting is necessary.

Properly constructed stack spaces are readily warmed and ventilated, owing to the vertical slits at the bottom of each tier, whereby air circulation is engendered. In a large building, whose cost exceeds a million, it is possible to combine both arrangements of stacks, by extending them vertically through the central portion of the building so that the periphery of the structure on each story may be allotted to readers or workers. An economical library plan devotes minimum spaces to lobbies, corridors, stairways and such "circulation," and the maximum areas to the library proper. In some monumental library buildings one-half of the ground area is used for walls, halls, stairs, etc., but it should be possible to limit them to 20 per cent of the area, and yet do justice to their functions.

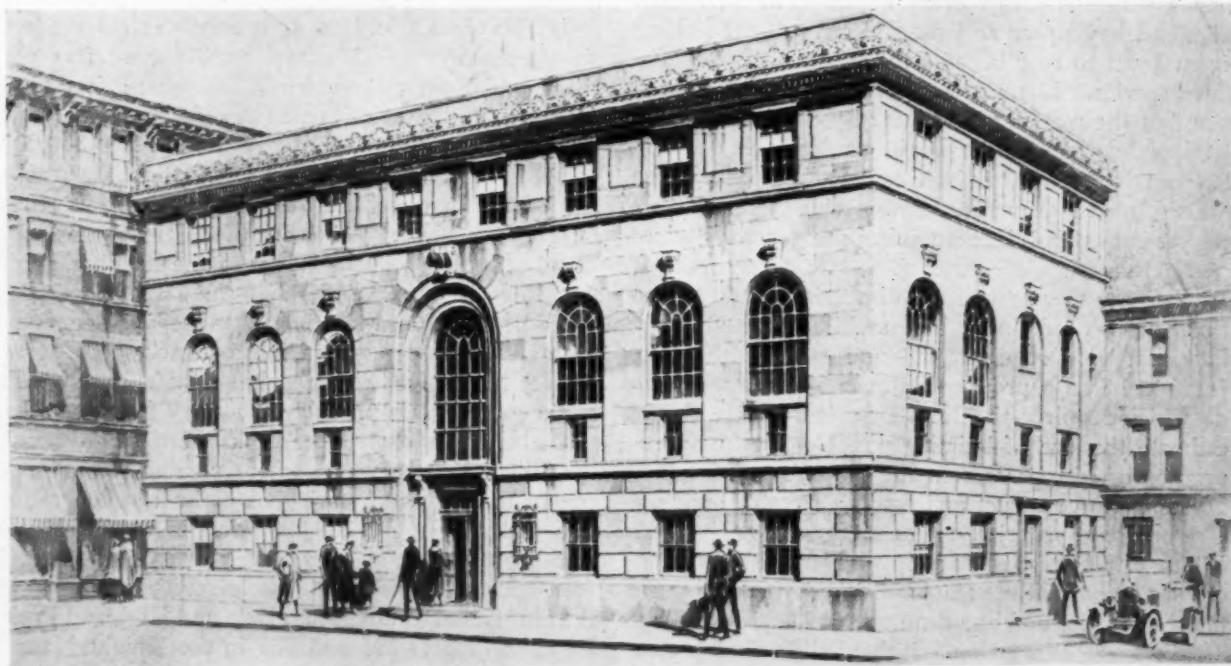
In the example under discussion, deducting 20 per cent from the 10,000 square feet, will leave 8,000 square feet, net area, in the basement and first story and (allowing for possible light wells) 6,500 square feet in the second story, or a grand total of 22,500 square feet. These areas may be apportioned among the library's departments, possibly on this basis:

Charging and delivery.....	1,000	square feet
The various reading rooms.....	9,000	" "
Stack (area of two tiers in basement)	6,250	" "
Catalog, work rooms and toilets..	2,750	" "
Librarian and staff rooms.....	2,000	" "
Lecture room	1,500	" "
	22,500	" "

The boiler and coal room might be below basement level, where in many instances they actually are.

Provision for Expansion. The size of a library building bears a natural relation to the population it is to serve. During the pre-war years, the Carnegie Corporation's donations were figured on a basis of \$2 per capita, but with the increased costs of construction, \$3 scarcely suffices, except for the simplest types. Where a new building replaces an older, there is usually an immediate increase in the patronage and within 10 to 15 years it becomes congested and requires expansion for both readers and books. It is well, therefore, to design the building so that it may be enlarged. Where such expansion has not been originally considered, it very frequently requires considerable ingenuity to secure a good result. The plan of the Saginaw Library accomplishes the purpose by changing location of the main entrance, which the corner lot made possible.

Admission, General Control, and Delivery Room. "Entrance at grade level" is a slogan with some librarians. It precludes, however, having a well-lighted basement. This presents the alternatives,—less exertion for the readers or more light for the workers. If the lot slopes sharply, both are attained. A library building is a "free for all" club house with no social barriers. Casual pedestrians are allured by electrically lighted bulletins and by book exhibits in the front windows designed like shop fronts. In a small library the adult public should enter and leave by one main doorway, admitting them through a vestibule, to delivery room. A separate entrance for children may be desirable. The delivery counter, in a small library, should be near the entrance,—ample space behind being more serviceable than excessive area in front; people enter singly or in small groups,



Pack Memorial Library, Asheville, N. C.
Edward L. Tilton, Architect

but congregate beyond the counter. The delivery room is the heart of a small library; its pulsations vitalize every part. To minimize the personnel required, the control must be centralized by locating the delivery (or charging) counter where it commands readers, book shelves, and entrances. Where crowds are served, it is advisable to have a restraining rail to keep the people in line by the counter.

In large libraries auxiliary desks in the different reading rooms are centers of information and control. A formation that radiates from the central counter, like staff officers surrounding their superior, is ideal for control and for economy of administration. The size and components of every delivery counter depend upon the librarian's requirements and vary too much to be detailed here. There are three main elements,—registration; charging or loaning; and receiving. In large libraries three separate counters may be necessary. The delivery space is the center of movement and commotion; it should be so disposed as to offer the least annoyance to those using the reading rooms. An adjacent room wherein to shunt garrulous gossips is a desideratum.

The delivery room should be well lighted, and its location may necessitate skylighting, in which case "actinic" glass in the ceiling sash will exclude the heat without interfering with the light rays. In cool climates diffusing glass of various kinds may be used. Ample artificial illumination, well distributed, is essential. The room should appeal by appropriate decoration in form and color. It should contain display racks for new acquisitions and informing bulletin boards. Seattles are not out of place, and from the room may extend "open" fiction shelves, forming alcoves where the public may browse, and take the selected books to the charging counter to be recorded.

Circulation Department. In a small library this department is combined with the delivery room. In a large library it may be segregated from the reading rooms and be provided with a special street entrance, as in the New York Public Library. The importance of a library is based largely on the number of books circulated annually. Librarians of different localities vie with one another in enlarging their respective "circulations,"—sometimes at a sacrifice of the quality of books distributed. The workers in this department have opportunities of encouraging the use of edifying books. Bacon said: "Books can never teach the use of books," so the librarian's knowledge may happily aid in directing the ignorant or uncertain readers to higher ideals.

Reading Rooms. The comfort, convenience and seclusion of the public are enhanced by the proper location, arrangement and design of the reading rooms. The collaboration of librarian and architect is here vitally necessary. The size and shape of any reading room can best be determined by plotting out the furniture. The tables should be spaced about 5 feet apart and the same distance from the walls of the room. The details are too varied to enlarge upon here, since the individual preference of the librarian and the requirements differ with every locality. But a fundamental condition, applicable to every case, is that of maintaining a reasonable pro-rata cost per reader accommodated. In our suppositive problem we have allowed 9,000 square feet for reading and ancillary rooms, to accommodate 300 readers at 30 square feet for each. The appropriation being \$300,000 makes each of the 300 seatings represent \$1,000 outlay, which is less than a third of the cost of the reader's seat in many large city libraries, built at considerable expense.



Delivery Room, Knight Memorial Library, Providence

Edward L. Tilton, Architect

The selection of reading room chairs may make necessary a choice between beauty and strength,—two qualities that do not always combine. The "Windsor" type is attractive, but it seldom withstands hard usage; the most enduring seems to be a chair without arms, with wood saddle seat, and with back, seat and legs thoroughly framed together and reinforced. The tables should be built up "five-ply," with softwood cores veneered with the hardwood selected for the finish of the room,—preferably oak for service and for excellence of appearance.

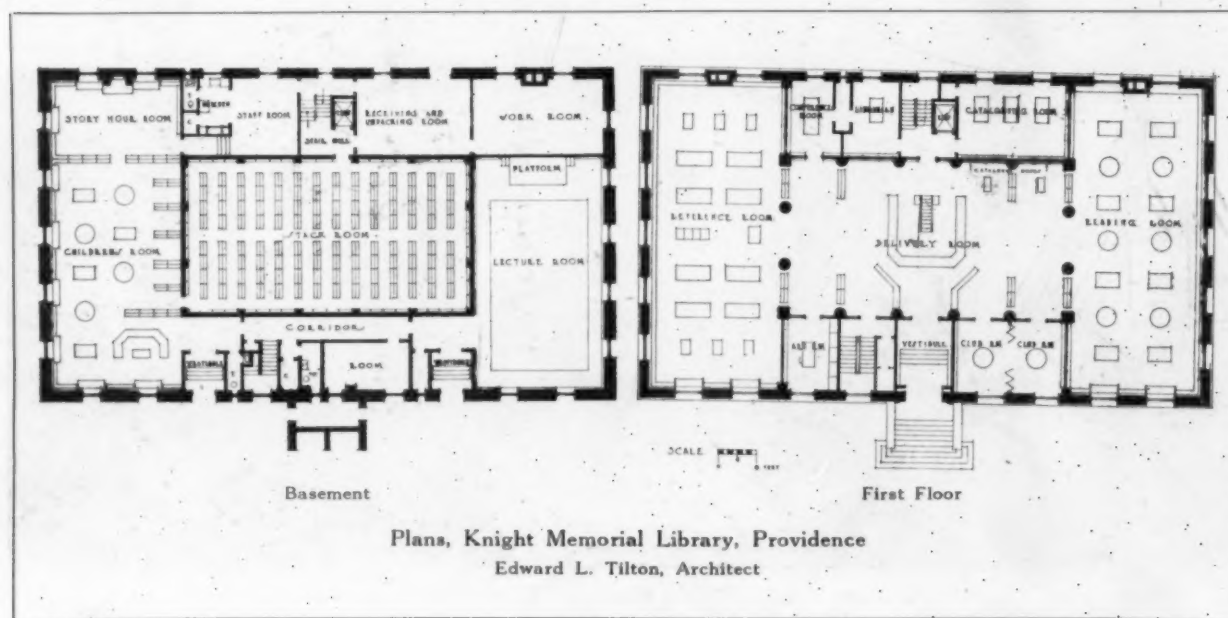
Shelving. The book shelving should have a fixed bottom shelf, 4 to 6 inches above the floor level, with the other shelves carried on pins which fit holes in the uprights bored every inch apart in height to permit of adjustment for different sized books; a basis for total height is 11-inch centers between shelves, which will give from 6 feet, 10 inches to 7 feet for a total height of seven shelves including base and cornice. A depth of 8 inches suffices for the shelves excepting those for the larger volumes, certain reference books, encyclopedias, and technical works. The wall shelving requires no wood backing, but may set against the plaster, unless it conceal heating coils, in which case the shelving must be supplied with wood backs insulated with asbestos and sheet metal to shield any books from the heat. Shelving cannot be properly made by the ordinary mill but only by manufacturers accustomed to cabinet construction. This applies to the furniture and technical library equipment throughout. Other concomitants to the rooms under discussion are dictionary stands, atlas cases, filing cabinets for clippings and for photographs. For atlases and folios, tables with sloping tops are convenient. The floor covering of all readers' room should be resilient and quiet. Cork carpet or cork tile are used largely in many libraries.

Newspapers and Periodicals. Newspaper reading in libraries is generally discouraged. As much

space is occupied by the reader of a two-cent paper as of a two-dollar book, and newspapers are cheap enough for everyone to buy his own. Such a room is likely to become a dormitory for vagrants who seek it for repose rather than for edification. Some of the large libraries, however, allot space to current newspapers and storage for the bound volumes, for the use of persons with legitimate motives. For such rooms high stand-up desks with broad, sloping sides discourage loafing. Small libraries may subscribe to their local dailies,—a half-dozen of them can be filed in a section of wall shelving in which the shelves have been replaced with cleats attached to the sides and sloping from top-rear to bottom-front, with hooks or rebates to hold the files.

Periodical space is indispensable. In college libraries, periodicals are cognate to the reference books and frequently impart more recent information. They may be variously cared for,—sloping shelves for the current periodicals with horizontal shelves beneath each, to hold the previous issues until ready to bind; or horizontal shelves, 4 inches apart, properly labeled for the current numbers with cupboards below for back numbers. In either case the shelves for displaying the magazines should be within eye range of a standing person to be entirely practical.

Catalogs. The catalog cases should be accessible to the public, the delivery counter, the reference room, and the cataloguing workroom. It is difficult to locate them contiguously with all four elements enumerated, so the cataloguing room is likely to be sacrificed. One solution is shown in the Knight Memorial Library, where the catalog trays are planned to slide both ways. The writer invented this system 25 years ago for Juniata College. It would not suffice for large libraries, where conflicts would arise too frequently between users on opposite sides of the cases. Such libraries must incur the expense of duplicate catalogs; the children's department, fur-



thermore, will need its own in most instances.

The standard tray holds 1,000 cards, or a possible 1,200 of thinner paper. Averaging five cards to a title, there would be required, for our imaginary 300,000 volumes, 1,500,000 cards, which would require 1,250 to 1,500 trays. It is desirable to limit the case height to 15 trays (13 are better), which would necessitate 84 to 100 trays horizontally. The width of trays approximates $6\frac{1}{2}$ inches center to center. Therefore the lineal extent would be $45\frac{1}{2}$ to $54\frac{1}{2}$ feet, unless in double rows. Some standard cases have sliding shelves to rest the trays upon while consulting the cards, but this is objectionable, since one person obstructs the access to many other trays. It is better to have small "stand-up" tables, approximately 40 inches high, upon which to set the trays, the tables covered with a cork or similar surface. Separate catalog cases may be required for special collections, such as those devoted to music.

Special Departments. The sub-division of departments under special heads depends upon the demands made upon the library. In manufacturing towns it is necessary to have collections of germane technical works. Books on patents and patent law are closely allied to the technological. Differing from these in appeal are the art and music collections. Each art folio should be laid flat on roller shelves. Broad tables with sloping tops are desirable for consulting the folios. Valuable books should be in cases with locked doors whose panels may be of wire mesh or glass. Thin music scores, if shelved upright, require racks with partitions not over 12 inches apart or with adjustable supports on the shelves. Large maps in frequent demand may be hung on spring rollers from a "canopy" at the ceiling. The average-sized maps should be pasted on muslin and folded to the dimensions necessary to fit shallow drawers designed for them. Photographs and clippings should be mounted and filed vertically

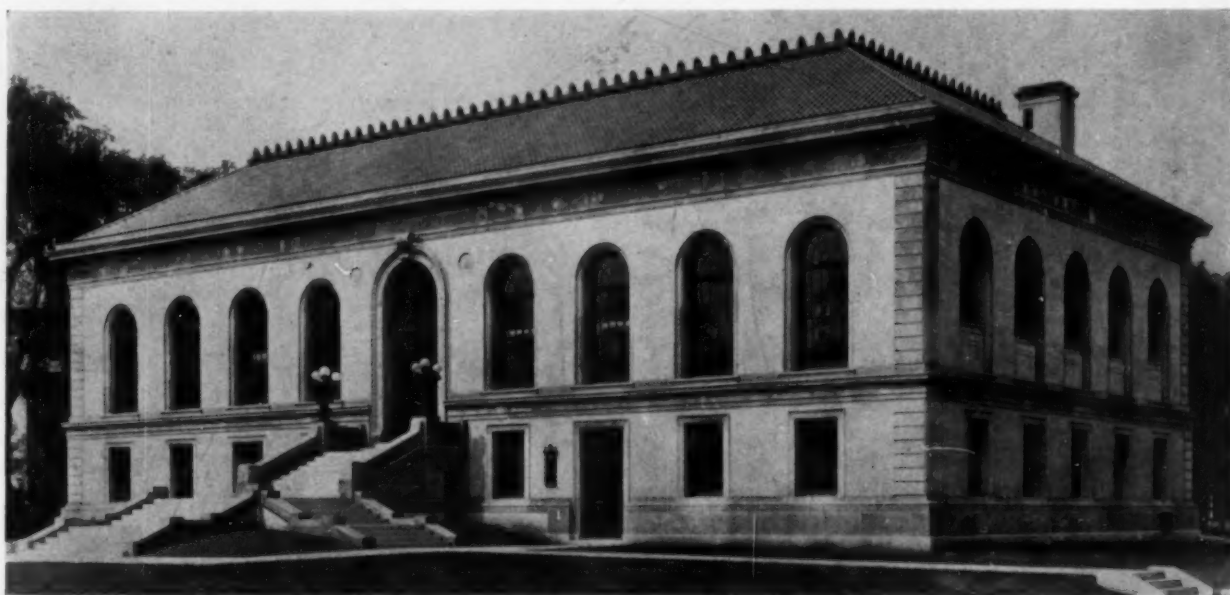
in cabinets whose deep drawers are provided with cloth separators that slide along small rods. Very large photographs and pictures can be kept in portfolios placed vertically in cupboards with doors hinged at the bottom, to afford ease of access.

Children's Department. Ever-increasing thought and effort are being expended upon this department to cooperate with the schools in developing good citizens. Branch school work has grown to large proportions. Publishers are specializing in juvenile books issued in such numbers that shelf room needs frequent expansion. After school hours the children crowd to the library, and it is noteworthy that the parents of the majority are of foreign birth. In Cleveland's libraries the children must wash their hands before handling books, a useful lesson in cleanliness, which results in many improved homes.

Children are restless, and in a library they must be segregated from the adults either on the opposite side of the building under supervision of the main desk, or in another story. If in the basement, especial care should be taken to make the rooms damp-proof, airy and light. This position permits of direct entrance from the outside. If placed in an upper story the children should not enter the adult sections of the building. The problem has been solved at the Mount Pleasant Branch, Washington, where an outside stair admits the children to their department, divided into separate spaces for the "little folks," the grammar, and the high school grades (Plate 106). The heights of chairs and tables for children are proportioned to the users. The standard table top for children is 30 inches by 52 inches, the adults' 36 inches by 60 inches, dimensions practically standard.

Club rooms in town libraries and seminar rooms in college libraries are essential adjuncts. Advance notice to the librarian gives opportunity to prepare the books on the given subject, ready at the time.

Staff Offices and Work Rooms. Comfortable



Knight Memorial Library, Providence

Edward L. Tilton, Architect

quarters for the staff, including rest room, locker room, toilet room, possibly with shower, and kitchenette, will yield better returns in efficiency and library results than those obtained from a disproportionate lecture room. A good librarian and an efficient staff are as essential to a library as a competent president and faculty are to a college, and it is equally important to maintain esprit de corps in a library.

In a small library it is usually necessary to locate the librarian's office within easy reach of the delivery counter, but in larger libraries the librarian should be more secluded, where he can work with less chance of interruption. It is well for his room to be large enough to hold a table where the trustees may assemble for occasional board meetings, for which a separate room is an unnecessary luxury except in metropolitan libraries where it may be excusable. Combining the librarian's and trustees' rooms gives space to the former to conduct his work in unhampered quarters and to have his documents at hand when the trustees require his reports. A secretary's room adjacent, where the callers may be received and their business analyzed without unnecessarily interrupting the librarian, is desirable. The working space and rooms should be ample to insure the proper running of the machinery of administration. The order and cataloguing rooms should be near the librarian's office, for convenience of supervision, and should be within easy reach of the stacks either on the same level or by lifts. They are equipped with typewriters, shelf list cases, shelving, and work tables. Good light and air are vital to ensure the health of the occupants and to enable them to prosecute their arduous work effectively. A floor covered with cork carpet or good mastic is usually satisfactory, noiseless, and easy to walk upon.

A bindery is not necessary except in very large libraries, since it is usually cheaper to send books out for rebinding; but a room or space for ordinary repairs is desirable, and means should be supplied for warming the glue pots. Lavatories and sinks are requisites in all work or repair rooms. A receiving and unpacking room in basement or at grade level should communicate by lift with the work rooms just mentioned. The lift should be large enough to accommodate a book truck and one or two people. An electric push-button lift is the most useful. Passenger lifts for the public are expensive to install and to operate and are unnecessary except in buildings of several stories, where upper floors may be devoted to exhibition or lecture rooms much used.

Galleries for Exhibits. Exhibits of paintings and historical or other collections have educational value, but the cost of space required usually overbalances their value in a library. Collections increase by donations, often of questionable merit, and with the constant growth of the library, a state of mutual crowding is engendered which embarrasses both. It is better to devote the building to library work and to house collections in a separate structure. If a delivery room runs through two stories with a gallery around the upper level, it is profitable at times to utilize such space with museum cases for the exhibiting of small objects germane to the library work. Appropriate paintings, pictures and illustrations in the children's room are always desirable and are not to be excluded elsewhere on the library walls if hung where they do not attract gazers to the detriment of readers. Statues and plaster casts of æsthetic value are likewise desiderata when properly placed in relation to the architecture of the building.

Lecture Room. The lecture room, unless usable



An Interior, Knight Memorial Library, Providence
Edward L. Tilton, Architect

for other purposes, is likely to make the least return and should not, therefore, be too large nor occupy valuable space on the main floor. For this building the lecture room need not accommodate more than 125 to 150 seats, for which 8 to 10 square feet per seat are necessary to allow for aisles and platform space. The cubic feet content of such a room, with a 12-foot ceiling, would be 18,000, and at 50 cents (the cubic foot cost of our building) would represent \$9,000 as the amount invested in the lecture room. Interest at 6 per cent would be \$540, to which must be added the expenses of light, heat and janitor's labor. It is usually better economy to hire a hall in the neighborhood for lectures and entertainments and to omit such a room from a library building, or at least to reduce it to very small dimensions. In a Philadelphia branch the children's room is converted on occasion into a lecture room, a large table becoming the platform. The combination works well, since the hours of use do not generally conflict.

Furniture. The furniture will consist of delivery or charging counter, catalog cases, bulletin boards, tables, chairs, shelving, and the various items of equipment for the rooms devoted to periodicals, newspapers, fine arts and special collections, as well as the suite for the librarian and staff, for the cataloguing and work rooms, and for the lecture room. Our building, as before said, is intended to accommodate 300 readers, and for convenience we can assume that the tables will be the standard 3 feet by 5 feet size for four persons, making a total of 75 tables and 300 chairs. The 50,000 volumes to be distributed throughout the rooms will need about 1,000 feet of bookcases, five shelves high in the children's room, and seven shelves high elsewhere, and will cost about \$7,500, if made properly. Metal

shelving can be installed for nearly the same price, but it is usually not so attractive in its appearance.

Stacks. As before indicated, the amount of stack required may be calculated by multiplying the square foot area of the stack room by 20 volumes, if but one tier of seven shelves be required; by 40, if two tiers be required, and so on. Conversely, if we wish to know the size of stack room necessary to house 300,000 volumes in one tier, seven shelves high, divide by 20, giving 15,000 square feet; for two tiers, divide by 40, giving 7,500 square feet; for three tiers, divide by 60, giving 5,000 square feet, and so on. Metal stack construction is an invention of recent years, and its rapid development has kept pace with modern library demands. There are several makes of metal stacks upon the market, each claiming to have special features of superiority. A few systems are suitable where the conditions impose heavy loadings of superimposed tiers, and where compactness and strength are desiderata. The weight of each tier of stacks, with its complement of books, may be figured at 125 pounds to the square foot. The cost may be roughly computed at 50 cents per cubic foot of stack, including floors.

There are two general types of metal stacks, the so-called "standard type" and the "bracket type." There are radical differences in the construction of the various makes of stacks and in the use of cast iron, steel, and pressed or sheet iron. Before selecting one, a careful consideration should be given to the different types and makes, from full-sized models or, when possible, from work actually installed. Space will not permit of an analytical description of the different makes, but general points may be indicated, which might aid in selecting a type.

(A) Narrow upright supports between shelves



Photo. George R. King

Catalog Cabinets; Pasadena Public Library
Myron Hunt and H. C. Chambers, Architects



Entrance, Public Library, Longview, Wash.
Torbitt, Hoyt & Hoyt, Architects

make for economy. The space of a half-volume gained means $1\frac{1}{2}$ to 2 per cent increased volume capacity; that is, 1,500 to 2,000 volumes additional in every 100,000. This gain should be considered when the comparative prices of different makes and types of stacks are being judged before choosing.

(B) The provision for electric wires and switch plates on the stack ends is a point to be observed.

(C) The method of support for the electric conduits along the stack ceiling is important. They should not be wired to small beams, but holes should be drilled through the beams to support conduits.

(D) Many stacks are finished green, the color baked on. It is possible, however, to have the stacks finished in cheerful, light tones, though they soil more easily with the constant use they receive.

(E) If several superimposed stack stories are required, some makes of stacks are to be preferred.

(F) The usual length of shelves is 3 feet, but there is an alternate length of 3 feet, 6 inches, which permits an appreciable increase in volume capacity.

(G) The shelves are usually made of solid sheet steel, but there is also a shelf consisting of a parallel

series of inverted U-shaped sections, connected with separators, which is stiffer than the plate shelf and which is often used.

(H) The ventilating slit below the bottom shelf, at the floor, should be vertical, not horizontal, as it is in the older stack types.

(I) The shelves should be adjustable, every inch in height. The story height from floor to floor of each tier should be approximately 7 feet, 6 inches; in some cases it can be 7 feet. Less than that allows insufficient headroom for the ceiling lights in the gangways. The heights given admit of seven shelves with an average spacing of 11 inches and permit the lowest shelf to be raised above the floor with a vertical ventilating slit, and allow for thickness of supporting steel and flooring of the tier above, which are important details.

(J) For the stack flooring avoid glass, once much used from a fallacious idea that it admitted light to the upper shelves of the tier beneath. The light reflected from white marble, painted concrete or similar flooring is better.

In colleges where the upper classes and the honor men are allowed access to the stacks, it is well to provide small study alcoves, which will be much used.

These suggestions do not exhaust details to be considered in weighting the relative prices and qualities of the different makes and types of stacks. To repeat, the lowest bid is not always the most economical; the number of volumes shelved and the quality of workmanship and service should be considered as highly important factors.

Lighting. The lighting of the library is of paramount importance, and to accomplish a satisfactory result it is well to follow the school house requirements and make the total glass area of reading rooms equal to 20 per cent of their floor areas. The light from the windows will be effective in the room for a distance equal to about one and one-half times the height of the top of window from the floor. Ceiling lighting will be advisable for spaces not properly lighted by windows. The spacing of the bays or window openings is controlled, practically, by the ceiling heights and, aesthetically, by the effect to be produced. The classic proportions of a window are, height twice the width, or in some cases, one and one-half times the width. The height is limited in a reading room by the distance between the top of the wall shelving and the ceiling. In a room with a

15-foot ceiling and 7-foot high shelving, there will be only 8 feet above the shelving or, allowing one foot for a cornice, but 7 feet left for height of window, which should be either 3 feet, 6 inches or 4 feet, 3 inches wide. The spacing between window axes will need to approach 8 feet in order to insure sufficient light.

Here are two hypothetical developments of these suggestions:

(A) Reading Room, 61 feet long by 25 feet wide,—area 1,525 sq. ft.

Net glass area, one-fifth of 1,525, equals 305 sq. ft.

Ceiling of room, 15 feet high.

Windows 7 feet high by 4 feet, 8 inches wide, equals $32\frac{2}{3}$ sq. ft.

10 windows required, six on the side and two at each end.

Windows spaced approximately 8 feet, center to center.

(B) Reading Room, 141 feet by 35 feet,—4,935 sq. ft.

Net glass area, 987 sq. ft.

Ceiling of room, 20 ft. high.

Windows 12 ft. high by 6 ft. wide.

15 windows required, 11 at the side and two at each of the ends.

Windows spaced at distances approximately 12 ft. on centers.

Note that Room A will accommodate 14 tables, 3 ft. x 5 ft., in two rows of seven each, and that each table will seat four readers; a total of 56 in a room of 1,525 sq. ft. or 27 sq. ft. per reader. Similarly, Room B will accommodate 51 tables in three rows of 17 each, and 204 readers in an area of 4,935 sq. ft., 24 sq. ft. per reader. It is preferable, however, to allow 30 sq. ft. per reader, since some of the tables will be omitted to allow room for a possible information desk, filing cabinets, dictionary stand, and similar items of equipment which the librarian may perhaps wish to install.

Objection is sometimes made to the "prison-like" aspect of a room lighted only by windows above the line of the 7-foot high wall shelving. To obviate this, it is possible to introduce occasional small "squeezer" windows framed in the shelving. If properly handled, these openings improve the exterior effect. Or, the window sills may be brought lower by sacrificing some small extent of the shelving.

Artificial illumination is produced by various types of electric lamps, of which the nitrogen is one of the more recent. The amount of light required may be roughly figured at a minimum of one watt for each square foot of floor area when a direct lighting system is used. Indirect or semi-indirect lighting will



Hill Avenue Branch Library, Pasadena
Marston, Van Pelt & Maybury, Architects

require more wattage per square foot. The net area inside the walls of approximately 9,500 square feet, that is, 10,000 less the walls, will require for proper direct illumination enough lamps to yield at least 9,500 watts. A number of small wattage lamps in a ceiling fixture is better for the eyes than fewer large wattage lamps. In general, the lighting should be arranged to produce an evenly distributed illumination and to avoid bright spots. Illumination by fixtures depending from the ceiling yields good practical results. Table lamps for readers are expensive, and the necessary floor receptacles prevent the ready shifting of tables. In a browsing room stand lamps with easy chairs make for comfort, but the combination is expensive. Candelabra or torcheres may be used effectively in the delivery room. In the catalog, work, staff and librarian's rooms, base receptacles must be conveniently distributed. The panel boards for the lighting circuits are well located when on or near the delivery desk, within easy reach.

To illustrate a method of computing the outlets, wattage and circuits required, we can refer to Room B, just described, with an area of 4,935 square feet.

Since we cannot foresee whether other than direct lighting may be demanded, it will be best to allow $1\frac{1}{4}$ to $1\frac{1}{2}$ watts per square foot. There are 11 windows on the side of the room and two at ends; therefore the ceiling outlets can be located on the window axes, making two rows of 11 each,—22 outlets at 300 equals 6,600 watts. If properly wired, these outlets may be included in five circuits (1,320 watts each) controlled by switches conveniently placed; although another determining factor is the number of lamps on each outlet. If we use 25-watt lamps, 12 will be required for each outlet to give a total wattage of 300, and local underwriters' regulations may require a separate circuit to each outlet. The stacks would be lighted by conduit boxes, 6 feet on centers, in the aisles between stacks controlled by switches at the ends of the stack tiers. In addition to the light wiring, allowances should be made for an interior telephone system, for public telephone connections, for call bells, clock system, vacuum cleaner, electric elevator and book lift, and, questionably, a pneumatic tube system.

Heating. Libraries are usually steam-heated, for which the square feet of radiation may be roughly calculated by the Mill's formula of $2-20-200$, the sum of the glass area divided by 2; the solid wall area by 20; and the cubic feet content of the room, by 200. For example, our building, we assume, has a net area within the walls of 9,500 square feet by a height of approximately 40 feet under the roof, which gives 380,000 cubic feet. The glass area equals 1,900 square feet (or 20 per cent of floor area); the wall area equals the periphery of the building (150 plus 70 plus 150 plus 70); 440 lineal feet, by 40 feet height or 17,600 square feet less the 1,900 feet of glass, or 15,700 square feet. This formula will apply:

$$x = \frac{ga}{2} + \frac{wa}{20} + \frac{cc}{200} \quad \text{in which } x \text{ equals the square}$$

feet of radiation required; *ga* equals glass area of windows and ceiling lights; *wa* equals solid wall area; *cc* equals cubic contents. Applying this formula, we obtain the results:

$$x = \frac{1900}{2} + \frac{15,700}{20} + \frac{380,000}{200} = 3,625 \text{ square feet of}$$

radiation. If the radiation be concealed behind shelving or seats, it should be increased by about one-third or say, 1,200 square feet, giving, say 4,800 square feet, to which add 50 per cent for piping and for reserve power on boilers; or 2,500 added to 4,800 yields 7,300, which indicates the requisite boiler rating. The cost of the installation may approximate \$4 per square foot of the radiation, 4,800, or say \$19,200. An additional percentage of radiation

should be allowed for exposed walls on north sides and for ceilings under flat roofs.

Ventilation. The mechanical ventilation in an ordinary library may be limited to the lecture room and a possible small amount in the shape of "univent" or "direct-indirect" for certain of the reading or work rooms. A "plenum" system for the entire building is expensive to operate, and experience shows that the use of the fan is likely to be discontinued. The writer has arranged a simple system, first tried in Cleveland and since installed in many buildings, by which the radiators or coils are concealed back of insulated shelving with openings at floors and at tops of cases to permit the circulation of air. When the shelving runs beneath windows, either high or low, there is an opportunity to arrange an effective method of ventilation by opening the window slightly and inserting a deflector. Even with closed windows there is a continual circulation of the room air engendered by the spaces containing radiators between the walls and the back of shelving which act like flues. Chilled by the windows, the air is kept moving, which is the secret of ventilation.

Construction. Statistics have indicated that but few modern libraries have been destroyed by fire. Therefore, in districts where fireproof construction is not compulsory and the moot question arises between more space if non-fireproof, or less, if fireproof, it is likely to be decided in favor of the former. The use of non-fireproof construction has increased, however, with the upward trend of prices, so that the difference between it and fireproof construction is much less than during pre-war years. Reinforced concrete with pan or slab system is suitable for library buildings and usually costs less than steel beams and terra cotta blocks.

Decoration. Planning is for the mathematical, practical mind that unifies the heterogeneous elements into a systematic whole. Designing is for the artistic spirit that produces an exterior of beauty, symmetry and proportion. The architect should combine the ability to plan and to design, in order to produce an appealing result. Artistic decoration and mural painting enhance greatly the spiritual elevation which a library should propagate, like manna, to the hungry soul; but mediocre work is worse than plain walls. Appropriate planting enhances the beauty of the whole. Shrubs conceal the hard lines where the base of the building meets the ground. The construction resembles the human skeleton, similar in white, black and red man, child and adult, while the flesh covering of some may be beautiful and of others the reverse. The style may be Classic, Gothic or Renaissance, the materials may be marble or brick, but it is the spirit shining through that appeals.

The Librarian's Ideas of Library Design

By ARTHUR E. BOSTWICK
Librarian, St. Louis Public Library

THE architect is the only artist who has to consider utility. His function is to produce a result that will be satisfactory for its intended purpose and that will also be beautiful and fitting. Not all architects have lived up to this program, as no one knows better than the architects themselves. In many cases this is by no means the fault of the architect but of those whose business it has been to advise him regarding the uses of the building. Librarians and library boards, I am afraid, will have to take their share of condemnation for faults of this kind. In the cases of some very notable library buildings, no working librarian was consulted at all in connection with the plans, and the result was that the library boards and the architects were both deprived of knowledge necessary to make a workable structure. In one case, indeed, this method of procedure cost the library board the tidy sum of \$50,000, which was the amount necessary to fit the building to its proper uses. Following one or two cases of this kind, librarians who had the requisite influence with their boards have sometimes prepared complete programs covering the sizes, number and relative

positions of all the rooms in the libraries and required the architects to work to these programs, a procedure that is really as unfair to the architects as the reverse is to the administrators. Obviously, the logical method is for the administrator and architect to work together, being in close consultation at every stage of the planning, so that the result will be both useful and beautiful, the utilities not interfering with the artistic effect, and the latter not hampering the former; only thus can success be had.

It has been my good fortune to plan a large number of library buildings with some very eminent and competent architects, and in no case, I believe, did any of us have occasion to find fault with the method employed. If this is the way things are done, the librarian's ideas of library design will certainly be incorporated therein, but I should dislike very much to feel that any architect would accept the personal views that I am about to put forward as being applicable in all cases. In fact I believe that if two libraries in different towns are exactly alike, one of them is probably a bad library. Buildings should be as individual as people and are necessarily so if they



Photo. Baker

West Side Branch, Grand Rapids Public Library*
Robinson & Campau, Architects

fit conditions, local, climatic, social and economic. It is astounding, for instance, how little climatic conditions were regarded by architects of the older generation. In my own city, St. Louis, the older type of fine residence, designed mostly by eastern architects, was almost uniformly designed with apparently not the least knowledge that comfort here in the summer months is largely dependent on exposure to a south breeze. Librarians in the southern states tell me that they have there many Carnegie buildings designed by northern architects who were unfamiliar with the necessities of a summer climate. Discomfort results for both the staff of the library and its users,—and both are important to its development.

Modern Library Purposes. I am sometimes sorry that we have not adopted a more distinctive name for what we call "public libraries." The word "library" connotes, in the minds of many, a mere storage place for books, and the modern public library, although it is this, is a great deal more. The book, to be sure, is just as important as ever, but its reader has become equally important, giving the librarian and the library two units that must be taken into account instead of one. A building intended to store books

with safety and a reasonable degree of accessibility is one thing; to house the vast departments that are now necessary to bring about adequate contact between book and reader is quite another thing. The late Walter Cook of New York, one of the most human and appreciative architects that I have ever known, once said to me after I had described to him the uses that would probably be made of a branch library building that we were planning: "Why, this is not to be a library at all. It is to be a community reading club." He was perfectly right, of course. That is what all public libraries have become in these modern days. The club features have become prominent, and this fact must be given its full weight in future in planning either a central library or a branch building. A branch library building designed by one of the most eminent of American architects is a striking example of his total misapprehension of such a library's use and needs. Having his mind fixed on the day when all libraries were repositories of treasures which it was necessary to guard against theft, he fitted the front windows of this building with strong iron bars, such as one sees sometimes in a bank structure, while the rear windows were protected

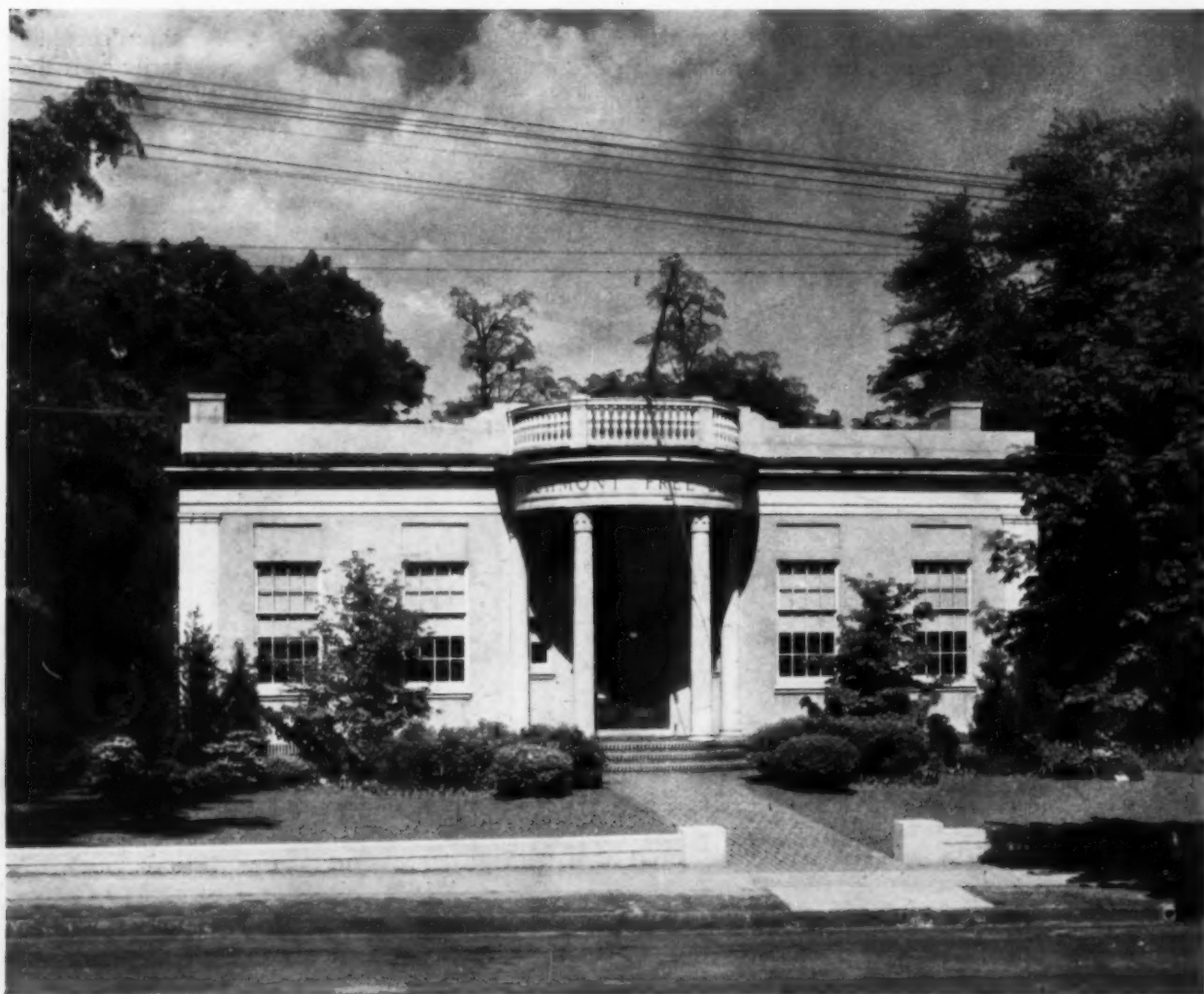


Photo. George H. Van Ande

Larchmont Free Library, Larchmont, N. Y.
Frank A. Moore, Architect

by heavy steel shutters. For a community reading club, such as this branch library building was intended to be, these things were, of course, grotesquely out of place, and they were ultimately removed.

Attracting Readers. There are two basic features of the modern library which are related to this closeness of contact between book and reader. The librarian's technical names for them are "free access" and "home use." Free access means that all or most of the books are where they can be seen and handled by the reader as freely as if they were on his own shelves at home. The latter means that their use is not limited to the library but that they may be borrowed and kept for a specified time at his house. Both these plans met at first with great objection from librarians and were for many years unjustly looked down upon. There are still some persons who think that a library where the books are carefully stored in a place inaccessible to the general reader is necessarily superior to one where the reader may see and handle them. It ought not to be necessary to say that neither of these opinions has any sound basis in fact. The old plan had its advantages and must still be used in libraries where the books are

curiosities or treasures rather than the tools of education and progress. But the open shelf and free access are now so much the rule that they have been the basis of most of the changes that differentiate the new community reading club from the old library, and they are becoming more important.

The differences between the two, in fact, begin at the outside. The old library forbade, or at least discouraged, use by the general public. It was distinctly a place for the scholar, and for him alone. The new library invites the public, and it is not content with this; it strives to attract the public in very much the same way that a merchant strives to attract customers,—by making public the advantages of reading and by letting everyone know what it has to offer in the way of books and aids to their use and appreciation. To this end it is desirable that no one should pass a library without realizing thoroughly that it is a library and without seeing something that will interest him in it and its use, so that he will be tempted to enter. This method of attracting the public has, of course, been long familiar to merchants. We see their attractive shop windows on every street. No one can pass a shoe store without



Photo. Mattie Edwards Hewitt

Ferguson Library, Stamford, Conn.

Tracy, Swartwout & Litchfield, Architects

knowing not only that it is a shoe store but what kinds of shoes are for sale there. But there are hundreds of libraries that are passed daily by citizens who do not know them to be libraries; or who, if they do, do not realize the advantages or pleasures of using them. Locating a library at a distance from the sidewalk and elevating the main floor above the head of a passer-by make any such plan as this absolutely impossible. It ought to be easy for a pedestrian to look through large windows directly into the library, so that, especially at night when the interior is lighted, everything that is going on is plainly visible to him. My experience leads me to believe that in this case, the number of persons who use the library will be very greatly multiplied. Advise the proprietor of a successful retail store to move to the second floor and take down all his signs, and note his response! Much the same is the librarian's view.

Interior Book Display. Coming now to the interior of the building, we find that the prevalence of free access has materially modified the method of book storage. Fifty years ago librarians were greatly divided in opinion regarding the merits of two methods,—the unified stack system and the depart-

mental system. In the former, all the books were shelved in classified order in a separate part of the building, generally inaccessible to the public. In the departmental system, on the other hand, exemplified in the Newberry Library building of Chicago, the books were disposed in the centers of separate rooms, each devoted to a different form of literature and each presided over by an expert. Each of these plans has distinct advantages and compensating disadvantages. Of late, librarians have been striving to combine them in such a way as to obtain the former without the latter, and although success cannot be said to have been complete, these efforts have greatly modified the interior arrangement of library buildings. The most successful compromise is doubtless that made in the new central building of the Cleveland Public Library, where there is a unified stack arrangement, but a separate reading room is in close connection with each section of the stack, all the books being thus subject to free access. Other libraries have followed suit with more or less success. This plan is expensive to administer, and it has been most successful in libraries with large incomes. But no builder of a modern library should

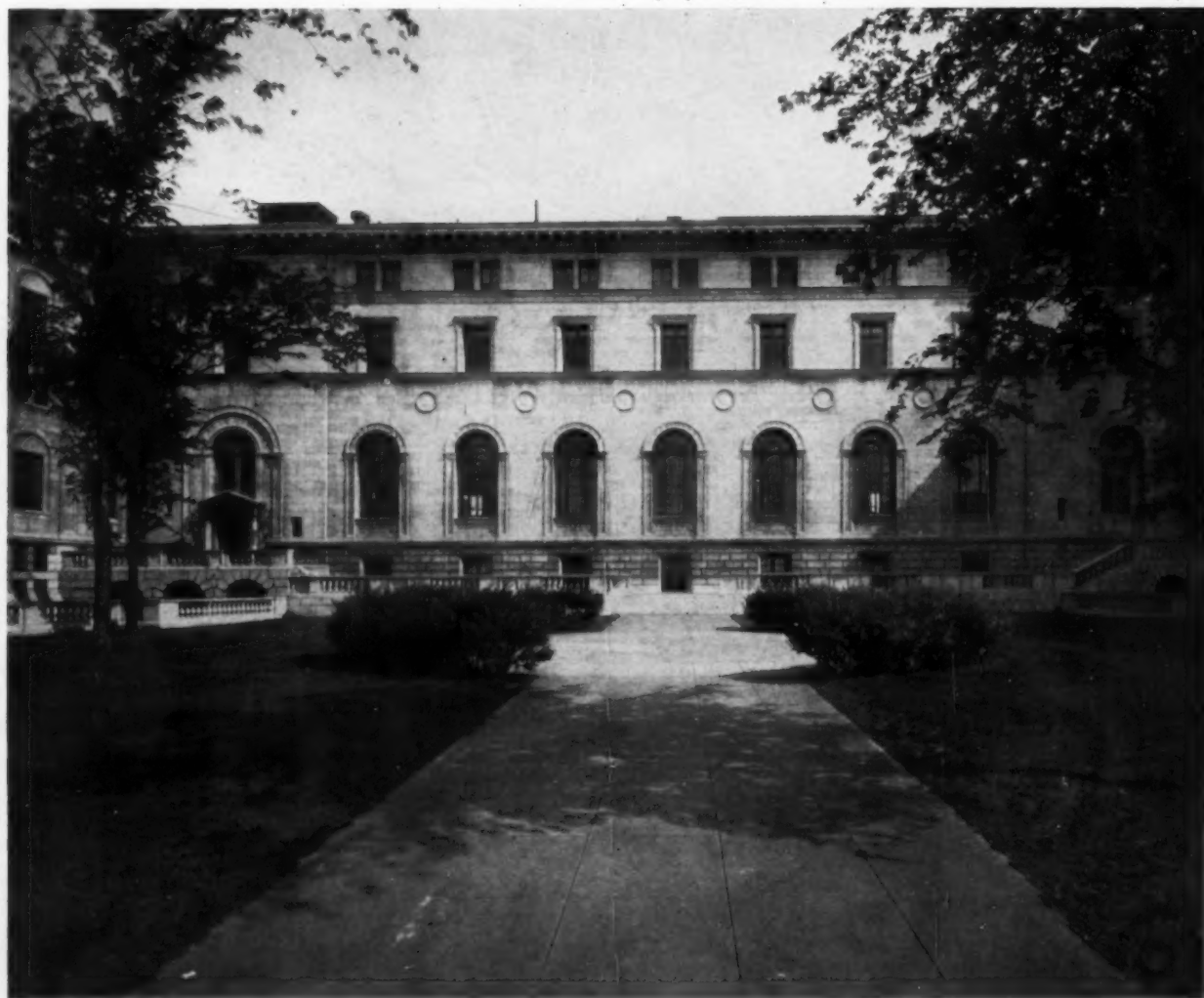


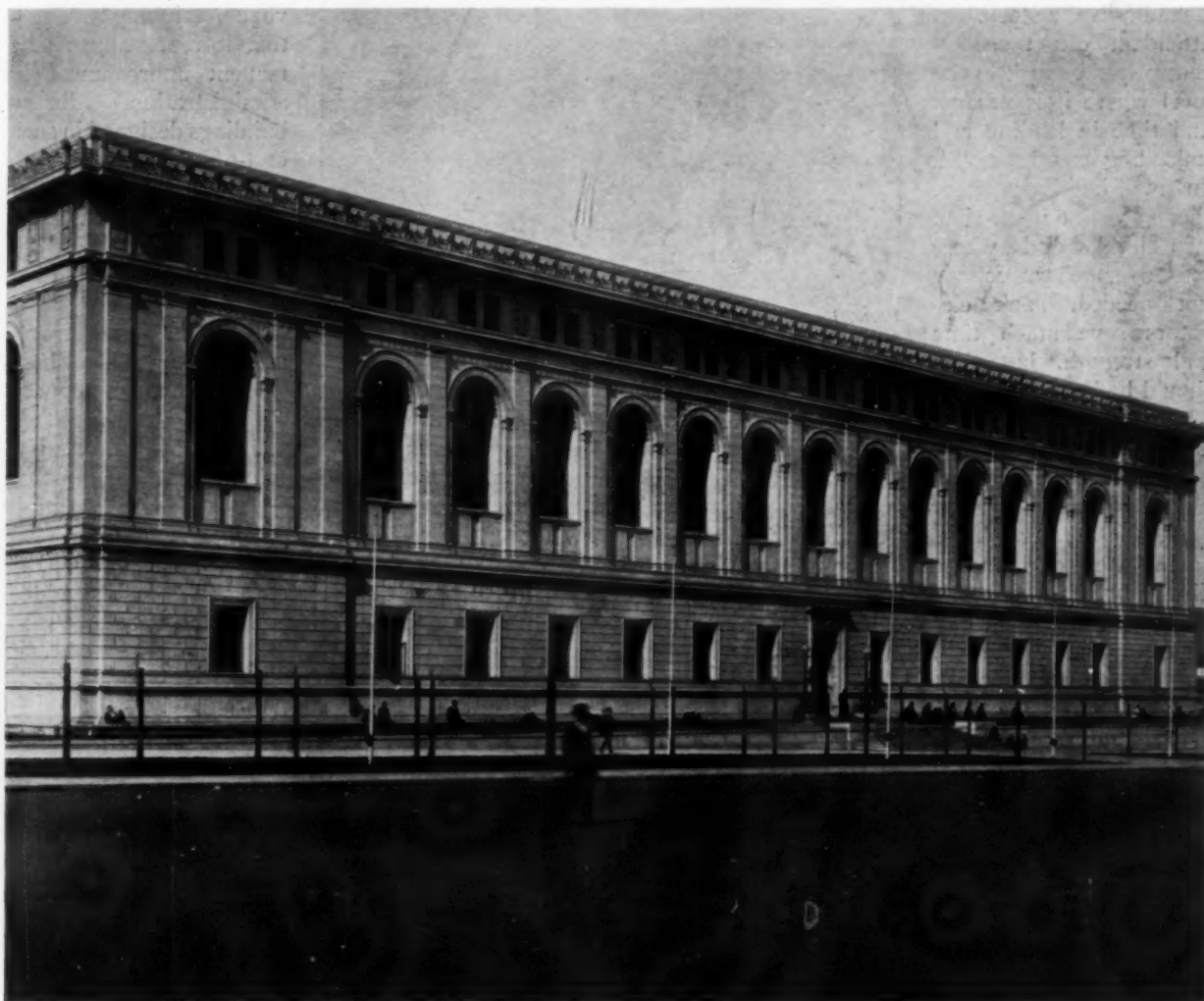
Photo. Kenneth Clark

South Front, St. Paul Public Library
Electus D. Litchfield, Architect

neglect to study this problem and to conclude what modification of it is best adapted to his own purse and his own local conditions. It is safe to say that no completely departmentalized library, like the Newberry, and no library with a completely unified stack arrangement will be built anywhere in the future.

Providing for Expansion. The most important change, and one whose necessity can be looked forward to with confidence, is that of an extension of the building. Steady growth has been a marked feature of all our library work, and there are no signs that it will be lacking in the near future. Every library building should have adequate ground suitable for such extension. The fact that many large buildings are without such provision is making a great deal of trouble for them now or will do so very shortly. And when the building is planned its future extension should be taken into account, so that additional building will be in the nature of completion rather than of patchwork addition; but at the same time the original structure should not appear to be incomplete. Very few library buildings have yet been planned in this way, and yet experience everywhere is demonstrating the importance of this detail.

The first material extension that is likely to be needed is in the direction of book storage. Our libraries are adding to their stocks of books with great rapidity. My own library, completed in 1912, was provided with space which we estimated would last 20 years, but now, after 15 years' use, we find our storage space already congested. Such space can be added either by lateral wings connecting with the original stack room, by vertical addition in the nature of a "book tower," such as is contemplated in the new Yale Library or by digging into the earth for underground storage. There is, however, another plan, originally proposed many years ago by President Eliot of Harvard, which, it seems to me, is preferable in many cases. This involves the construction of an inexpensive storage building on cheap land, say a mile or so from the central building. All books not likely to be called for more than twice a year or so could be stored there, and with modern motor transportation it would not be much more difficult to obtain them at this distance than it is from a stack room in the same building. President Eliot's position, that it is waste of money to use a building of expensive construction on the costliest



San Francisco Library

ground in the city merely for storage purposes, seems to me well taken. The plan seems to be practical.

The use of valuable space for corridors and staircases seems largely unjustifiable. I could name libraries where as much as 50 per cent of the ground floor area is occupied by halls and staircases, usually of expensive construction. Stairs, of course, will have to be provided, but they are used only when absolutely necessary and should not be featured architecturally. We go from one floor to another now by elevator, and the elevator service should be ample. Such service should not be limited to the first hallway but provided wherever the reader goes throughout the building, especially in the stack. Instead of using small lifts for books, it is better to wheel loaded book trucks directly into the elevator in the stack. An attendant can then accompany the truck to the level where it is needed, and time in loading and unloading can be saved. In small buildings, where there are not more than two levels and where passenger elevators are not needed, book elevators save much time and strength, but they

should be large enough to admit a loaded book truck. This necessitates the use of electric power. If this is not available or considered too expensive, a hand-power lift is better than nothing, but in this case it cannot be made large enough to admit a book truck.

Staff Quarters. There are still employers,—and among these one must reckon the members of some library boards,—who cling to the idea that it is possible to make a working staff too comfortable. One may hear this argument today from many who think that a comfortable worker is a less thorough worker than one who is continually subject to a certain degree of discomfort and inconvenience. I believe, on the contrary, that the more thoroughly comfortable the worker is, the better work he will do, and that care taken for staff welfare in planning a building is not only human but economically profitable. The day when every library worker had to stand up all day, had to get lunch by eating a sandwich in the cellar, had to climb stairs to go from the first to the sixth floor, and had no place to lie down when indisposed, is assuredly past. A library must have adequate staff accommodations, including a lunch room

with at least a kitchenette, a rest room, and possibly also an adequate recreation room to do its best work.

Beauty and Utility. Fashion, of course, has much to do with buildings as well as with other things, but whereas one may discard clothing that is out of style for more up-to-date garments, nothing of this kind is possible with a building. Period buildings are, of course, always in vogue,—too much so, it has

always seemed to me. From a librarian's point of view, an architect should strive to build something that is pleasing and impressive largely from its simplicity and fitting proportions and that will remain so through the ages. Librarians have been subject to the caprices of fashion rather more than architects. They have often insisted on some detail of construction that is temporarily in vogue, thinking wrongly that it represents a permanent improvement in administration. Library buildings designed in such cast-off fashions are to be found in all parts of the United States. Agreement between the designer of the building and those who are to use it is absolutely necessary, as has been said, but both

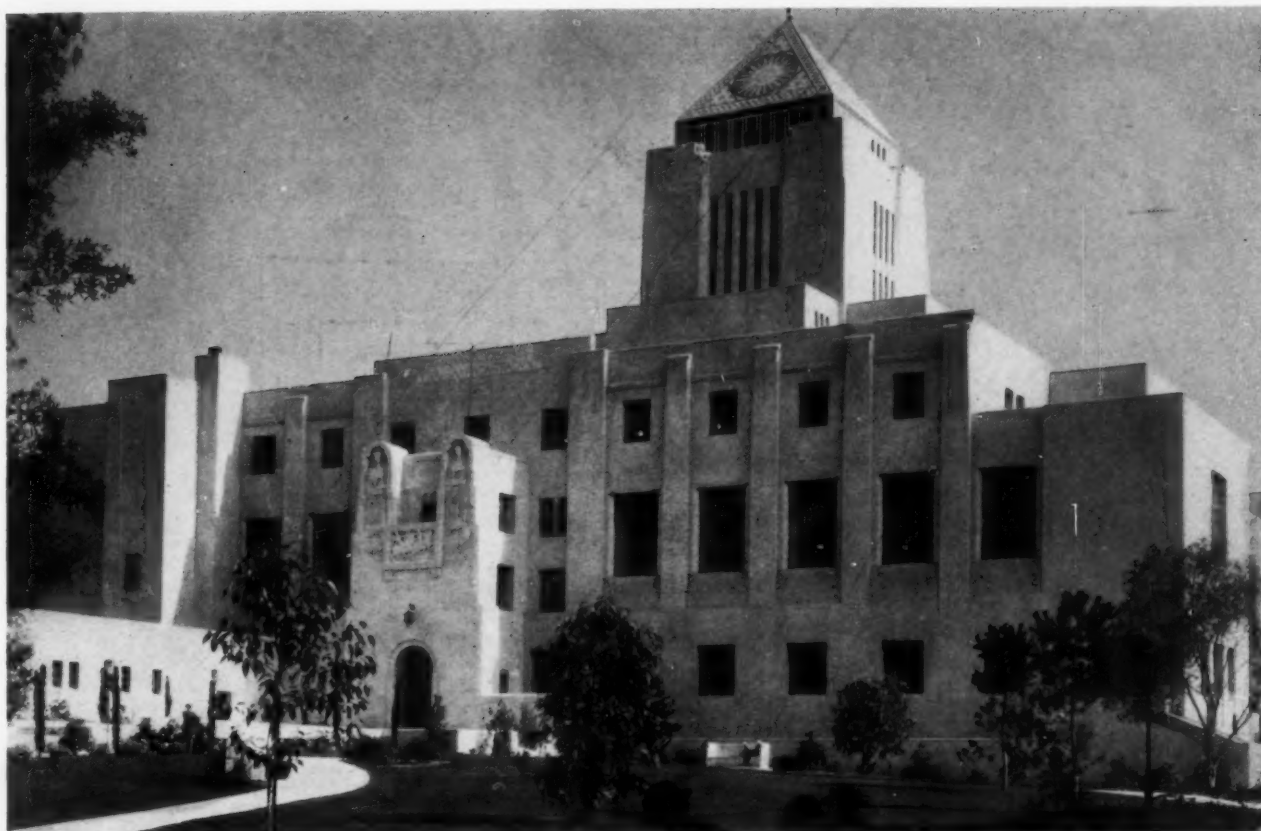


Photo. Kenneth Clark

Entrance J. J. Hill Library, St. Paul
Eliel D. Litchfield, Architect

librarian and architect should be on their guard against mistaking temporary fads for permanent betterments, as many mistakes in building will testify.

In closing, I desire to emphasize my opinion that not only the entire building but every element of it must be a combination of beauty and utility. That it should have beauty alone or utility alone will not suffice. This rules out ornamental details added merely for the sake of ornament; but it rules out as well useful adjuncts employed merely because of their use without regard to their appearance, such as ventilating stacks that seem to have been added as an afterthought. These considerations, of course, apply to all buildings but in a special degree to a library structure, which is perhaps the one public building that is constantly used by the class of adults that has, or should have, due appreciation of what is fitting and proper. A public library building must necessarily serve its community for a considerable time,—it may cater to several generations of readers,—and its very permanency constitutes a particular claim upon the thoughtfulness and resourcefulness of architect and librarian if the public is to be well served.



Photo, Fred R. Dapprich

ENTRANCE FRONT



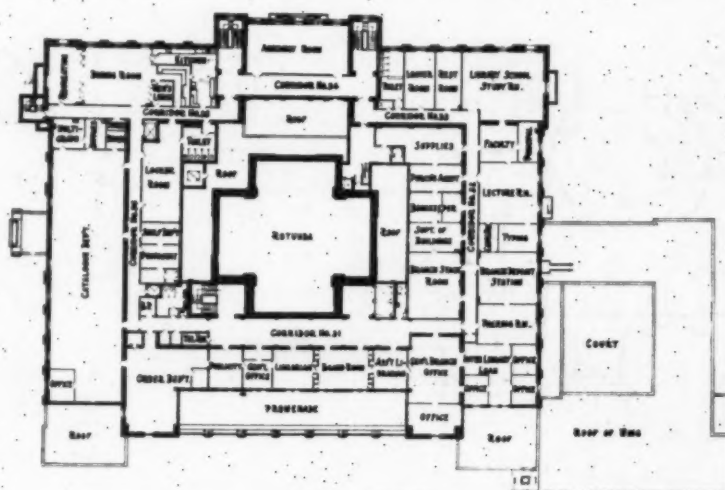
Photo, Mott Studios

Plans on Back

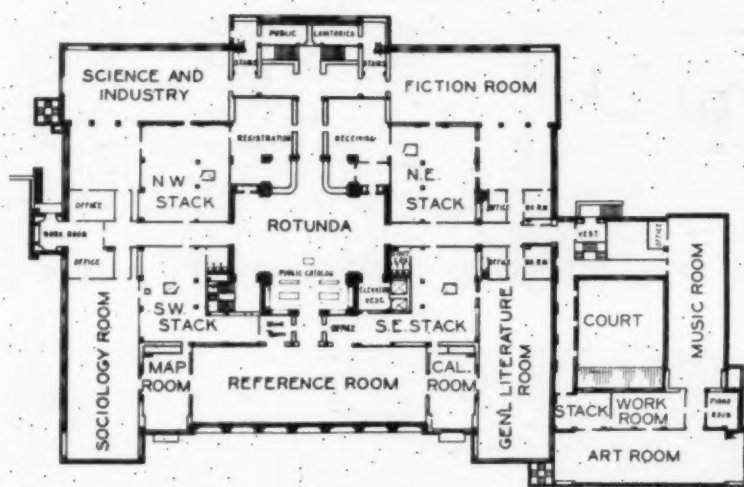
CHILDREN'S ROOM

LOS ANGELES PUBLIC LIBRARY

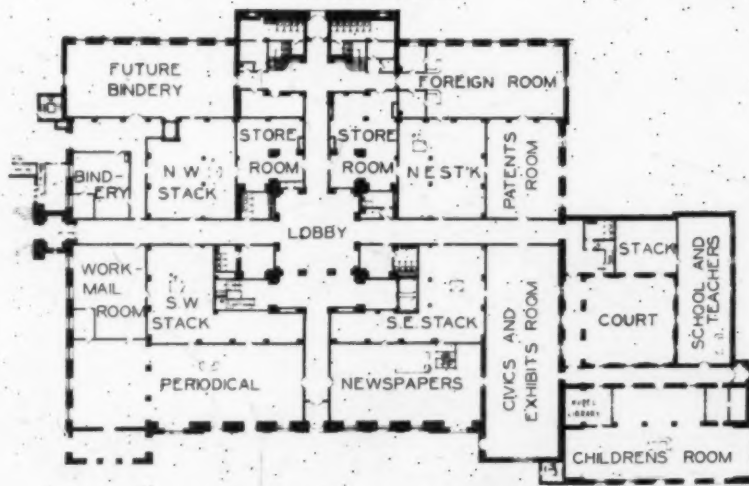
BERTRAM GROSVENOR GOODHUE, ARCHITECT; CARLETON MONROE WINSLOW, ASSOCIATED



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

PLANS, LOS ANGELES PUBLIC LIBRARY

BERTRAM GROSVENOR GOODHUE, ARCHITECT; CARLETON MONROE WINSLOW, ASSOCIATED



ENTRANCE FRONT

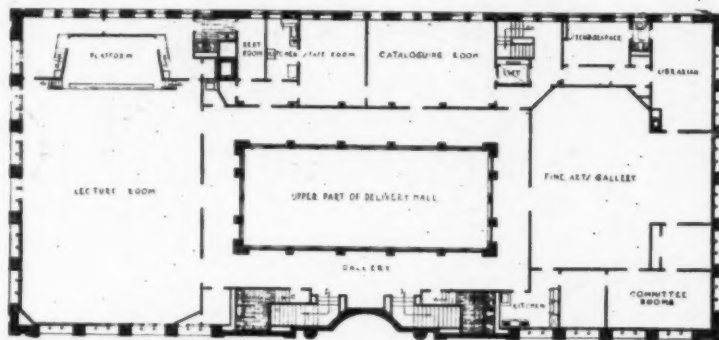


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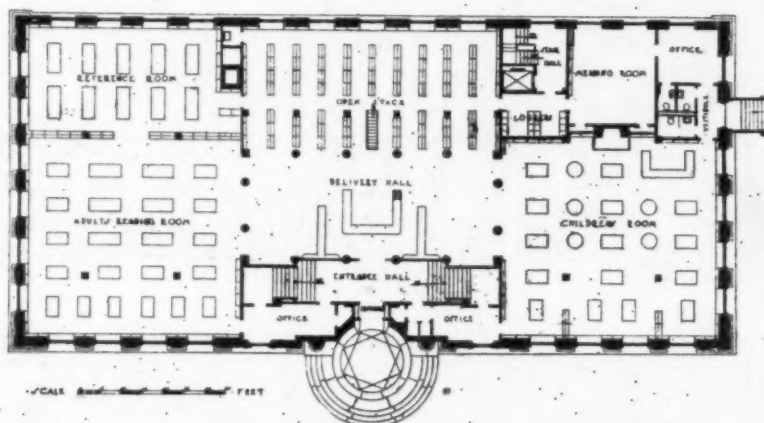
CHILDREN'S ROOM

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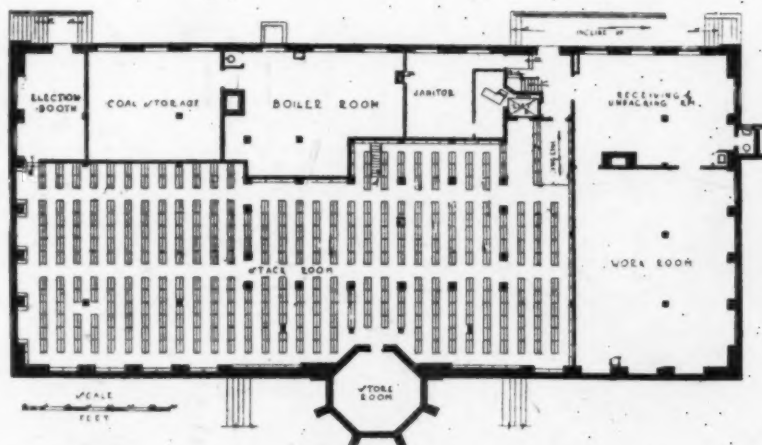
McGREGOR PUBLIC LIBRARY, HIGHLAND PARK, DETROIT
EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS



SECOND FLOOR



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BASEMENT

PLANS, MCGREGOR PUBLIC LIBRARY, HIGHLAND PARK, DETROIT

EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS.



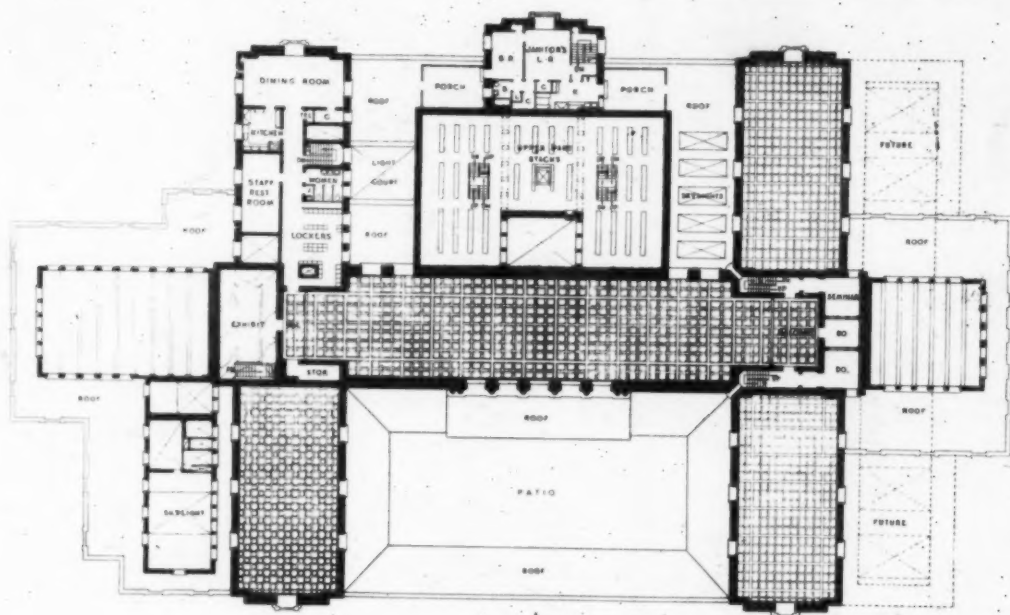
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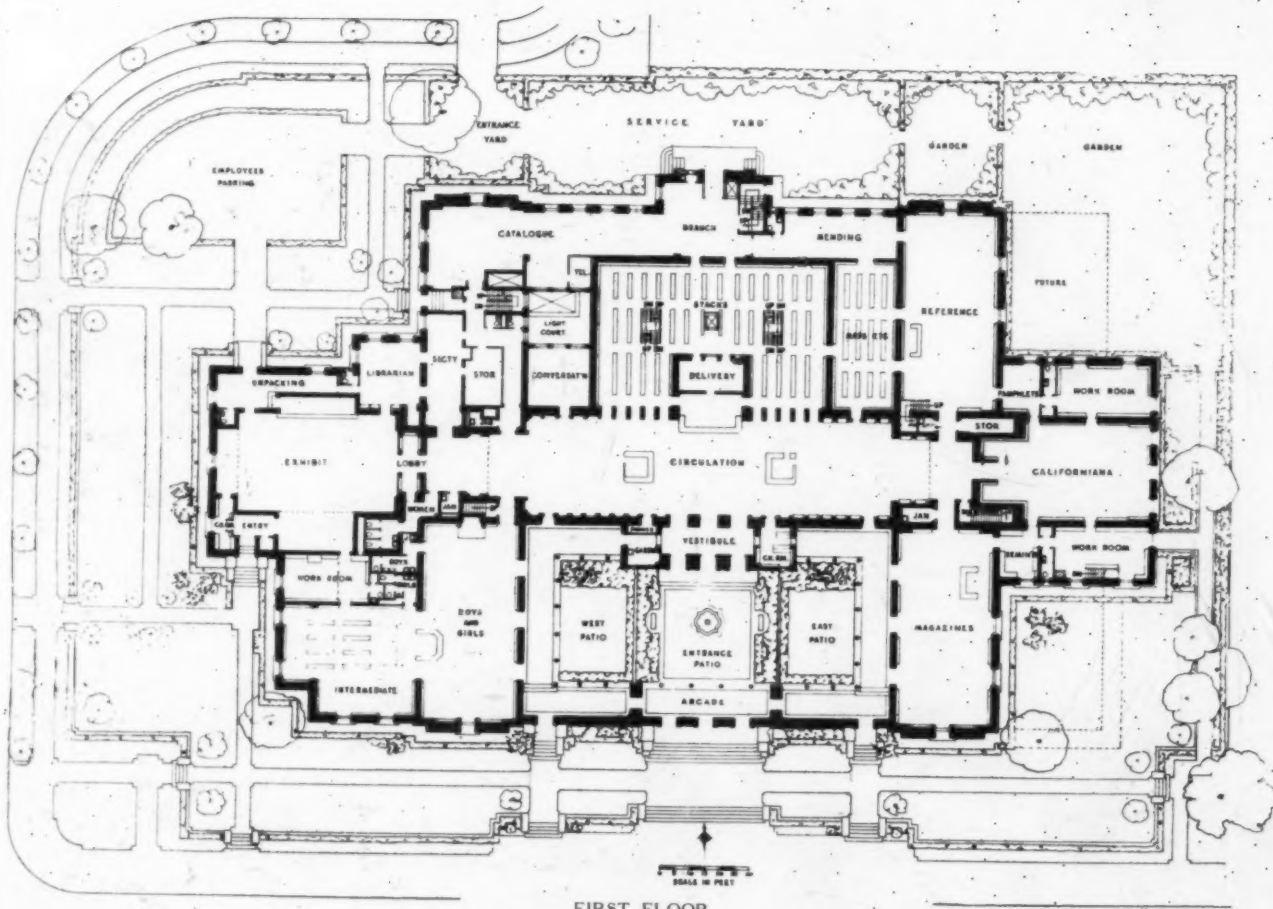
Photos. William Clark

Plans on Back

PASADENA PUBLIC LIBRARY
MYRON HUNT AND H. C. CHAMBERS, ARCHITECTS



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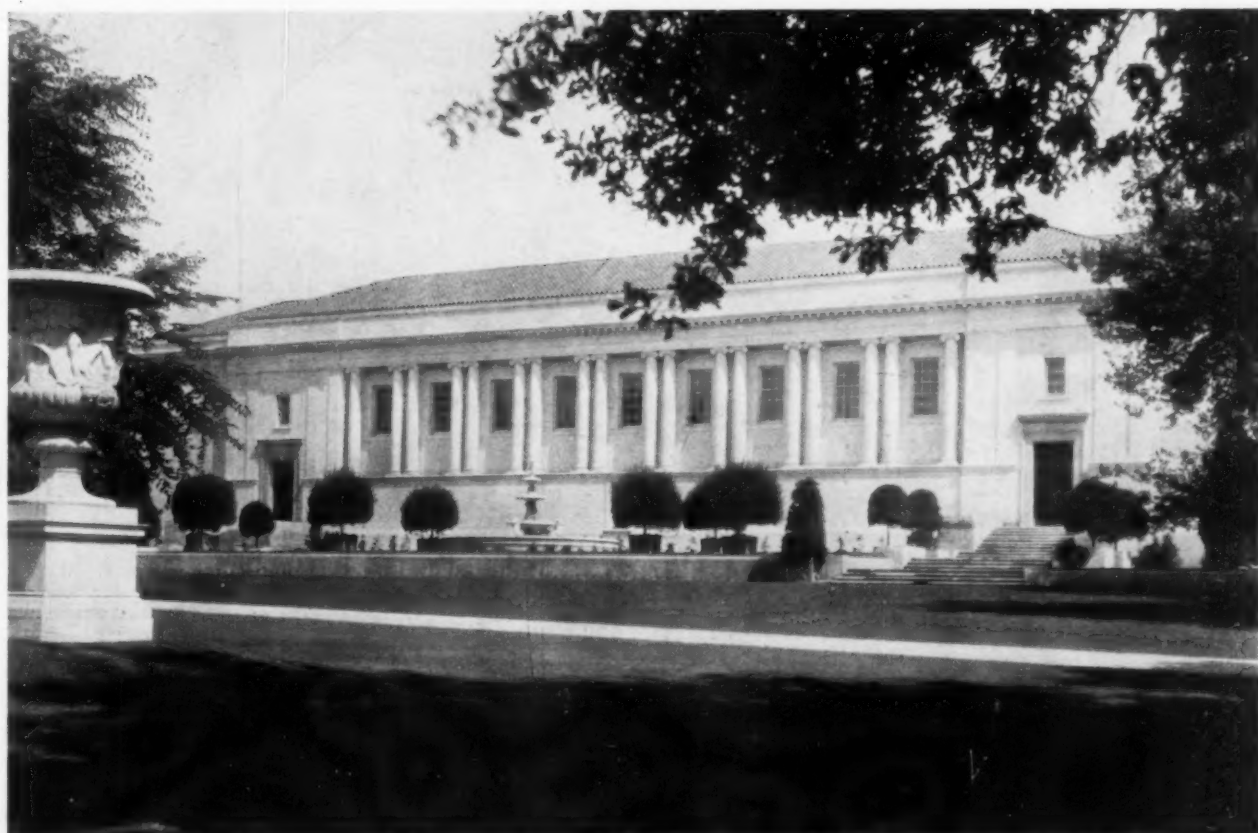


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PLANS, PASADENA PUBLIC LIBRARY
MYRON HUNT AND H. C. CHAMBERS, ARCHITECTS



AN ENTRANCE

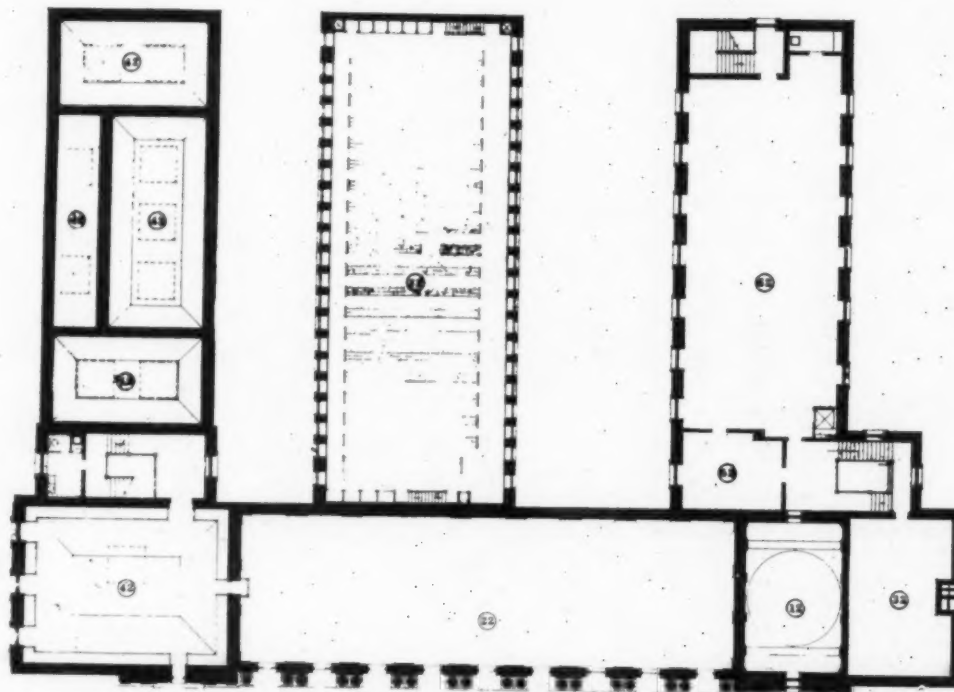


Photos, Shirley Vance Martin

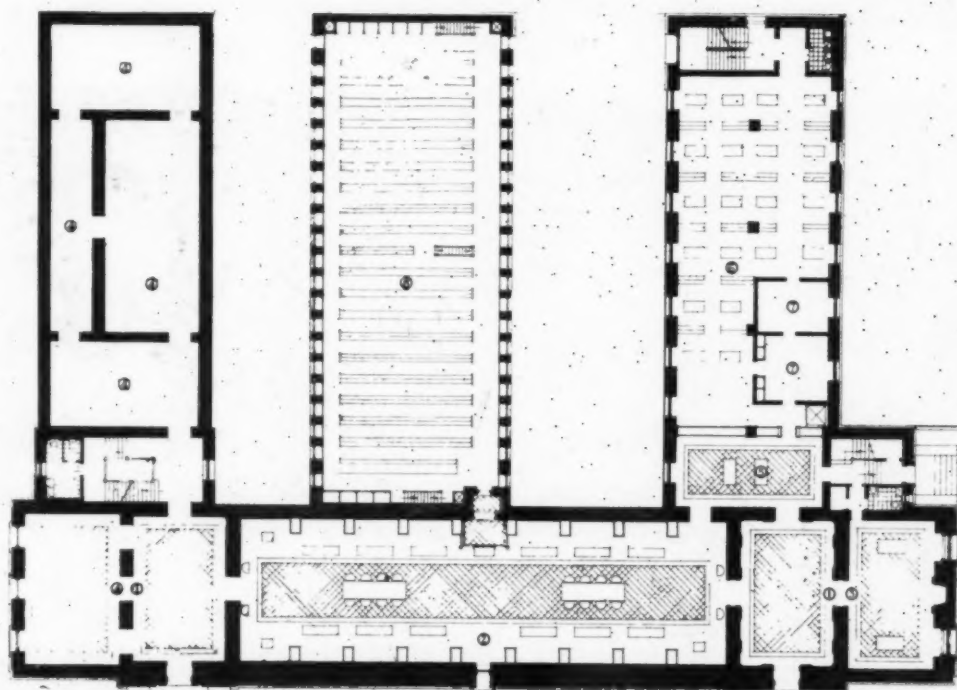
Plans on Back

HENRY E. HUNTINGTON LIBRARY, SAN MARINO, CAL.

MYRON HUNT, ARCHITECT



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FIRST FLOOR

PLANS, HENRY E. HUNTINGTON LIBRARY, SAN MARINO, CAL.

MYRON HUNT, ARCHITECT



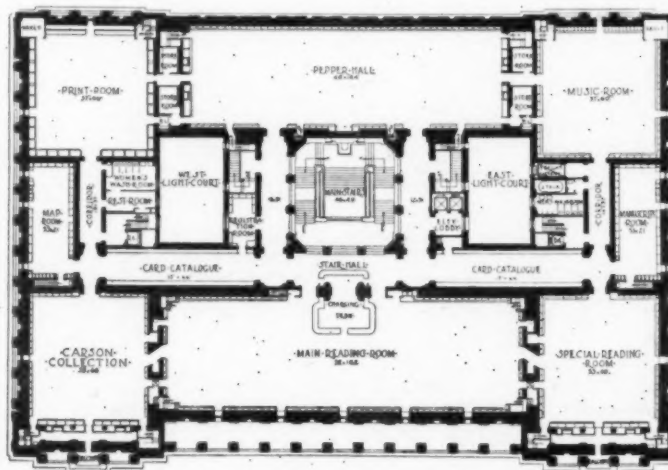
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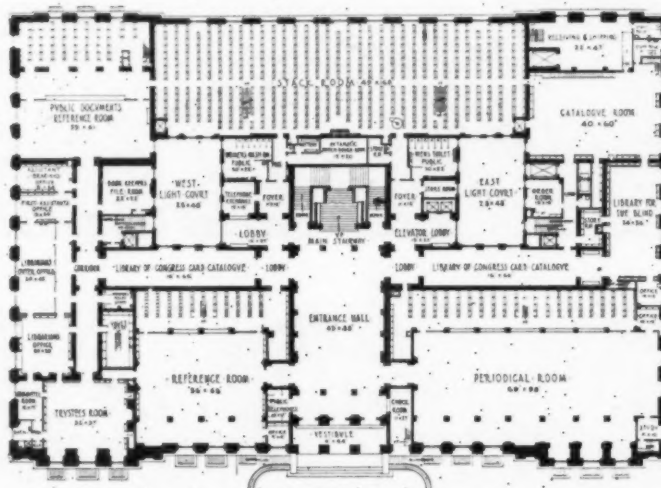


Plans on Back

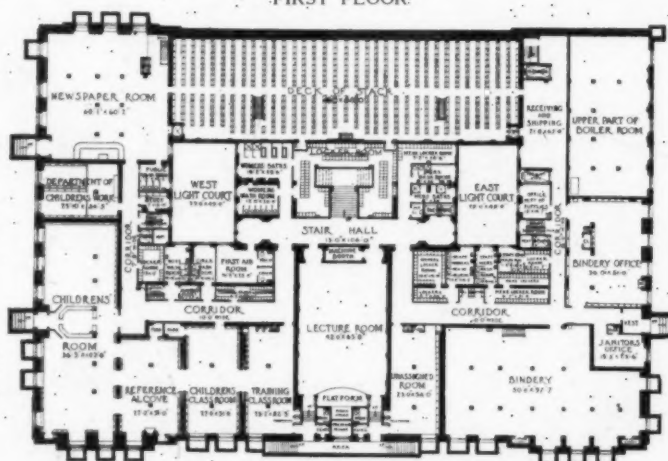
MAIN READING ROOM
PHILADELPHIA PUBLIC LIBRARY
HORACE TRUMBAUER, ARCHITECT



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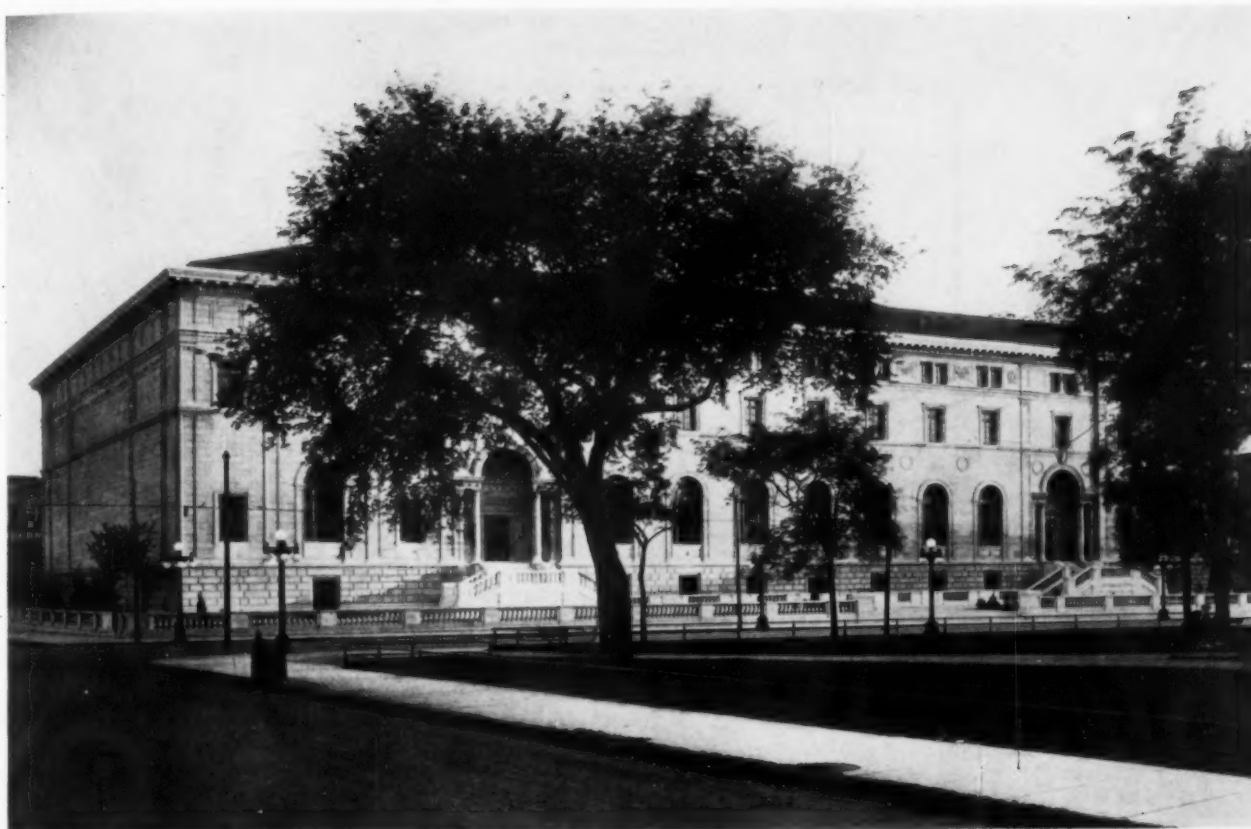


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BASEMENT

PLANS, PHILADELPHIA PUBLIC LIBRARY
HORACE TRUMBauer, ARCHITECT



NORTH FACADE

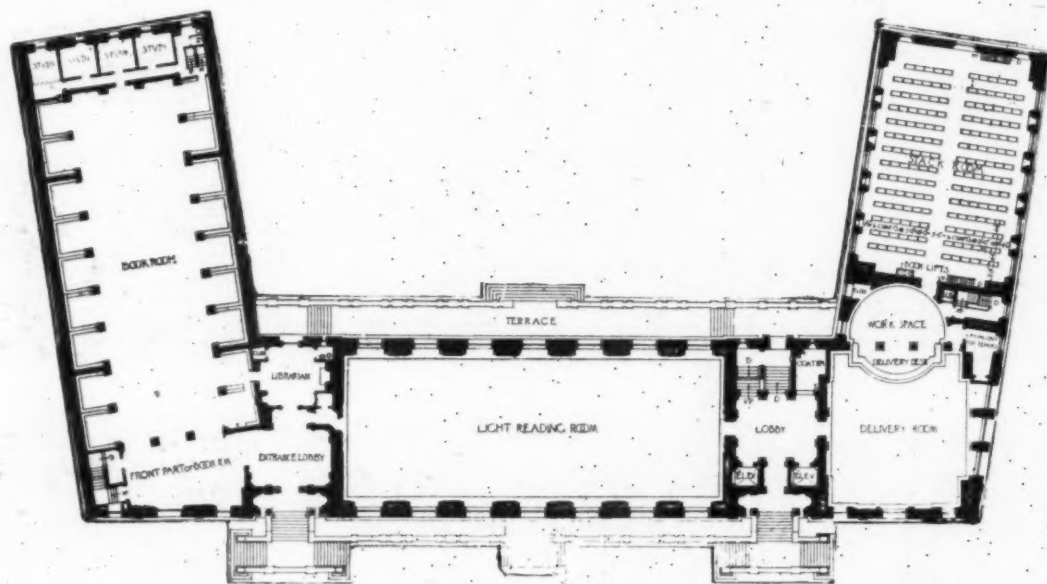


Photos, Kenneth Clark

Plan on Back

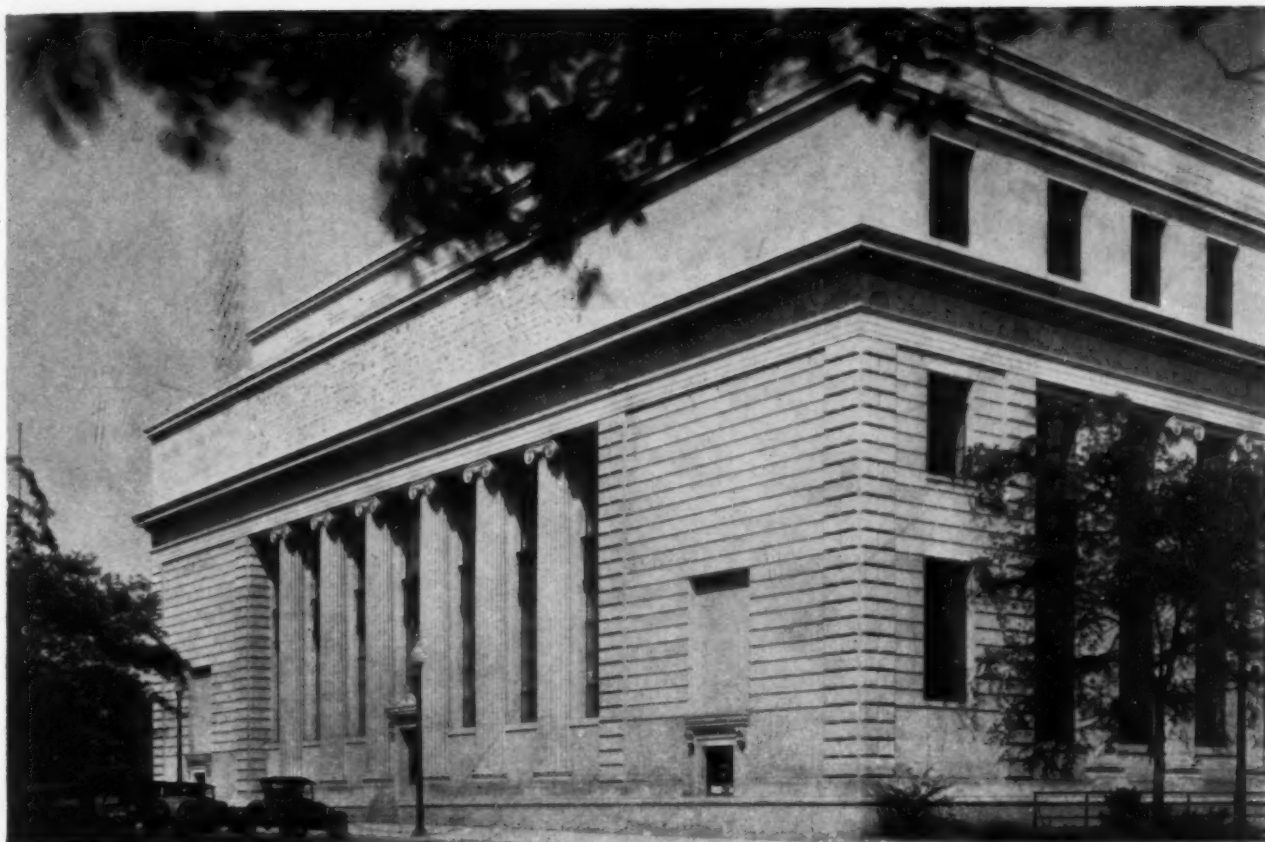
MAIN READING ROOM

J. J. HILL REFERENCE LIBRARY AND ST. PAUL PUBLIC LIBRARY
ELECTUS D. LITCHFIELD, ARCHITECT



PLAN, J. J. HILL REFERENCE LIBRARY AND ST. PAUL PUBLIC LIBRARY

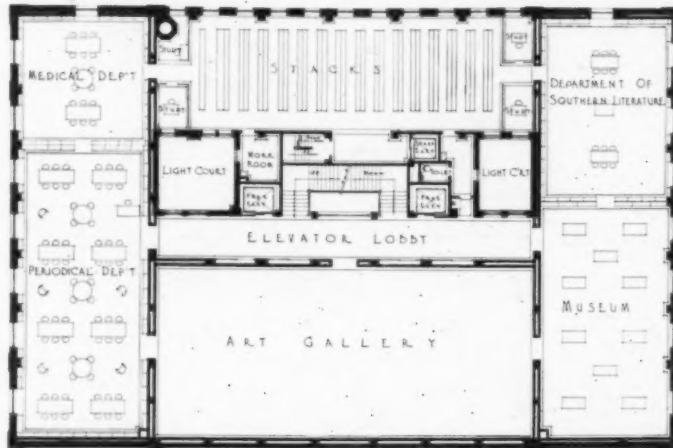
ELECTUS D. LITCHFIELD, ARCHITECT



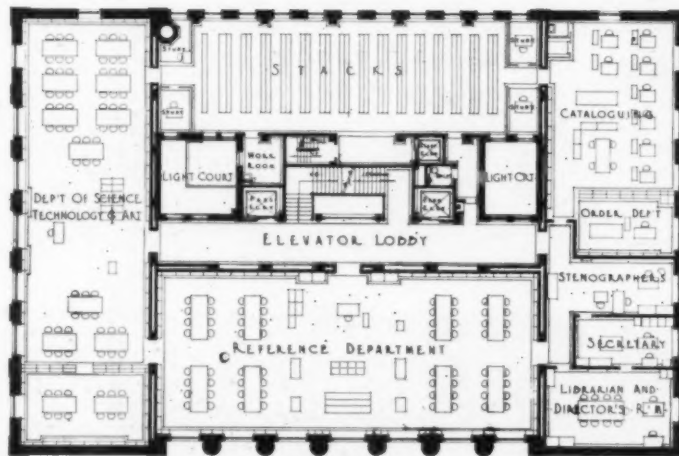
Photos. Tebbs & Knell, Inc.

Plans on Back

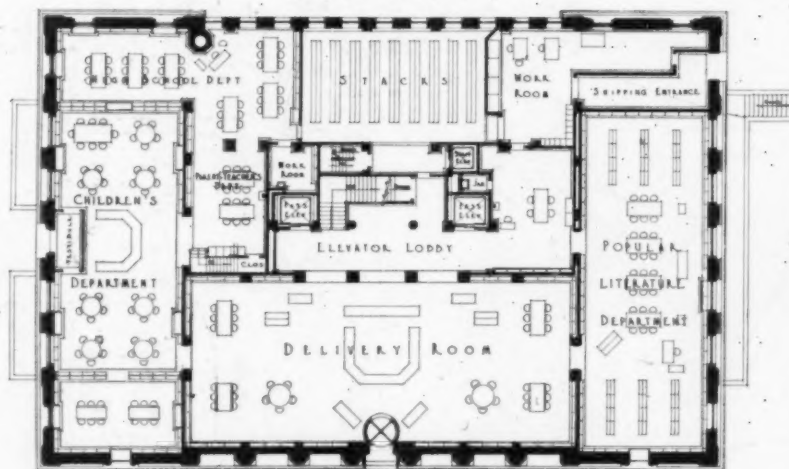
PUBLIC LIBRARY, BIRMINGHAM, ALA.
MILLER & MARTIN, ARCHITECTS



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

PLANS, PUBLIC LIBRARY, BIRMINGHAM, ALA.
MILLER & MARTIN, ARCHITECTS



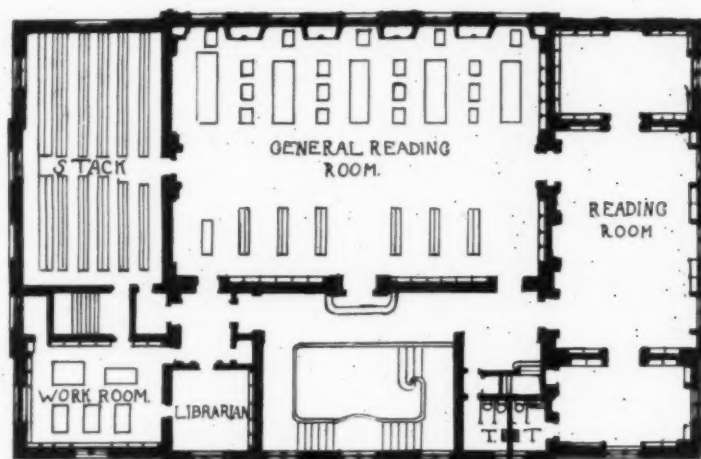
Photo. Brenza

EXTERIOR

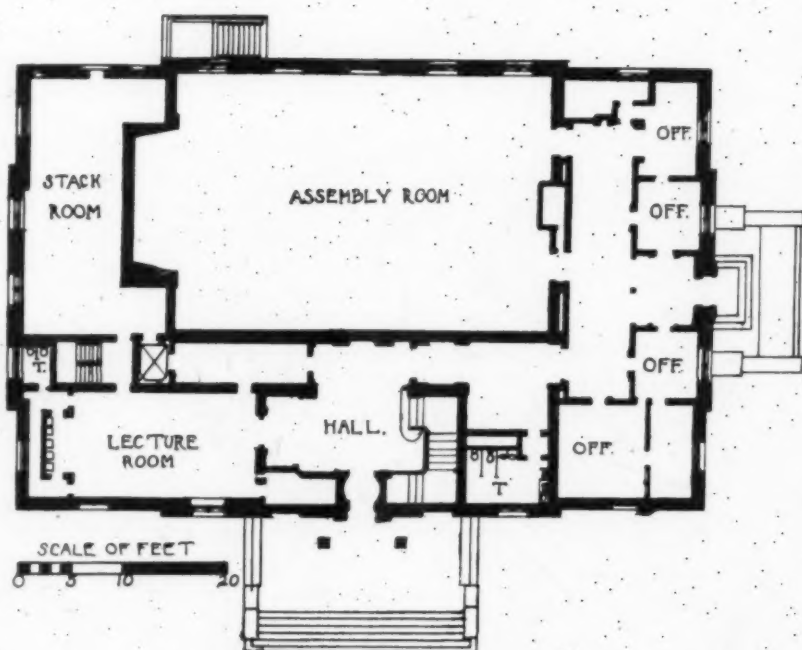


Plans on Back

READING ROOM
CLEVELAND MEDICAL LIBRARY
WALKER & WEEKS, ARCHITECTS



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PLANS, CLEVELAND MEDICAL LIBRARY

WALKER & WEEKS, ARCHITECTS

Ventilating and Lighting Library Buildings

By SAMUEL H. RANCK

Chairman, Committee on Ventilation and Lighting, American Library Association

LIBRARY buildings as a rule are open and in service long hours, frequently in our large cities 80 or more hours a week every week of the year, and on seven days of the week. During the scholastic year some of our university libraries are open even longer hours than public libraries. Churches, theaters, schools and other public places are rarely open half as many hours; many of them less than one-tenth as many as the library in the course of a year. These long hours with a variable load at different hours of the day and in different rooms at the same hour make the problem of library ventilation particularly difficult. The number of persons in the rooms to be ventilated might be termed the "ventilation load," and a variable load is always much more difficult to handle than a constant load. A special reading room, that is a room for a special class of readers, such as a medical reading room or a reading room for teachers, illustrates what is meant by a variable load. Such a room may have only one or two readers, or none for many hours of the day, whereas during the winter months, a newspaper or magazine room may be crowded to the limit all day long. The amount of air required for good ventilation in one room may be many times that in another.

Certain of our large city libraries have an additional problem in the winter months, particularly in newspaper reading rooms, which are frequented largely by unemployed persons who come from cheap lodging houses. Some of these people seem to go without a change of clothing for a whole season. This is also a problem in some children's rooms, where it is not unknown to librarians that certain children have their clothing sewed on in the fall, with no change until spring. Such persons bring to the library the problem of dealing with human odors. Besides the reading rooms and ordinary public rooms of the library, we have in many of our library buildings lecture rooms or auditoriums. A lecture room filled to capacity usually seats from three to four times as many persons as the same floor space when used as a reading room. This causes wholly different problems of ventilation in two rooms otherwise identical, and this difference must be duly considered.

In the main building of the Grand Rapids Public Library, we have a very good illustration of this, the reference room and the lecture room being on the same floor and identical in size. An audience that fills the lecture room will ordinarily raise the temperature at least 10 degrees in the course of an hour when it is freezing outside. The building is heated and ventilated by a plenum system, so that if the lecture room is comfortable the other rooms are entirely too cold. If, on the other hand, the other rooms are comfortable, the lecture room is hot and

"stuffy." People have difficulty in keeping awake, and everybody feels and knows that the ventilation is bad. We have remedied this somewhat by shutting off the plenum fan for the lecture room for several hours before a lecture begins and by opening the windows wide, thus chilling the room and walls down to nearly 60°. The fan, forcing air that will keep the rest of the building comfortable, takes on the load of the lecture room half an hour before the lecture begins. Conditions of this sort make it absolutely necessary, in planning a library building, that the heating should be independent of the ventilating system. Furthermore, in a large library building it is most important that the ventilation be controlled in every room at every hour of the day, in accordance with the conditions in each room. This means fans, for it is impossible to control the ventilation of a large library building without use of a system of fans.

Ventilation is primarily a physiological problem, for the comfort or discomfort of persons in a room, because of air conditions, is a physiological condition. Heat, humidity, odors, lack of motion in the air all affect the action of the bodily organs, causing comfort or discomfort as the case may be, thus greatly affecting the amount and quality of their work, and ultimately bad conditions will injure the health of persons long exposed to them. When the reaction produces comfort, we say the ventilation is good; if discomfort, bad. And psychology plays an important part in one's reactions to such conditions. Thirty-five years' experience in operating public library buildings and studying library buildings generally, has convinced me that psychology is a very important factor in successful ventilation. Different persons are affected differently by the same conditions. The heart beats of some people are much faster than those of others; for example, mine is about 20 beats per minute slower than my wife's. Usually persons with high pulse beats require very much less heat for comfort than persons with slow pulses. This is largely regulated by their clothing. However, if a person feels hot and uncomfortable, and sees the windows all closed and no evidence of air coming into the room, the psychological effect is bad; whereas if windows are partly open or ribbons or something colorful are placed at the vents through which the air comes into the room indicating air in vigorous motion, the psychological effect is good. In short, the whole problem of ventilation is essentially a "human" problem. It is a problem of ventilating people rather than ventilating buildings; and we know that people are more or less temperamental. For this reason one can never depend wholly on automatic mechanical devices,—thermostats, etc.,—to give entirely satisfactory results. Good horse sense

with an understanding of the whole problem must be used,—with some dependence placed upon diplomacy!

The public rooms of most library buildings are ordinarily too warm. People come into the building with their wraps on, while the women employes in the building, dressed in the present style, often have little clothing below the knees, with arms bare to the elbows or shoulders. How can we get satisfactory conditions for both these groups? When the building is too warm it affects the action of the skin and the heart of the individual, unless the air is in motion, and furthermore, in raising the temperature from 66 to 72 in a crowded room containing a considerable number of the unwashed, odors become very strong. The higher the temperature above 70 the greater the problem presented by odors from human bodies. Hence, keeping the temperature down reduces this very materially and improves the ventilation,—important, since many object to fresh air.

Securing good library ventilation, therefore, presents a problem of proper control so as to give the greatest amount of satisfaction possible under the varying conditions that exist in different parts of the building at different hours of the day, and to two groups,—the workers and the general public. It may be added with reference to the unwashed

that as a rule they are very much opposed to any evidence of fresh air in a room, and my experience in public library buildings is that there is a great deal more criticism from this group about too much fresh air than from those who feel that there is not enough. When there is added to the unwashed the presence of a number of persons whose favorite dish is garlic, one can imagine the difficulty of the whole problem! The physiologists and the medical profession have not yet definitely agreed upon what is "optimum" ventilation, and what ventilation really does in a physiological way. The engineering profession could greatly improve conditions if once it were really known what is the best thing to do. Most ventilating systems have been unsatisfactory because they are based on the wrong theory of what ventilation must really accomplish to be satisfactory.

Most of the ventilating apparatus in library buildings, and in public buildings generally, until within recent years, was based on the carbon dioxide theory,—namely, that human beings in breathing give off a certain percentage of carbon dioxide which poisons the air. The functions of ventilation machinery according to this theory are to supply fresh air from the outside to dilute the polluted air in the building and to remove the vitiated air, so as to keep

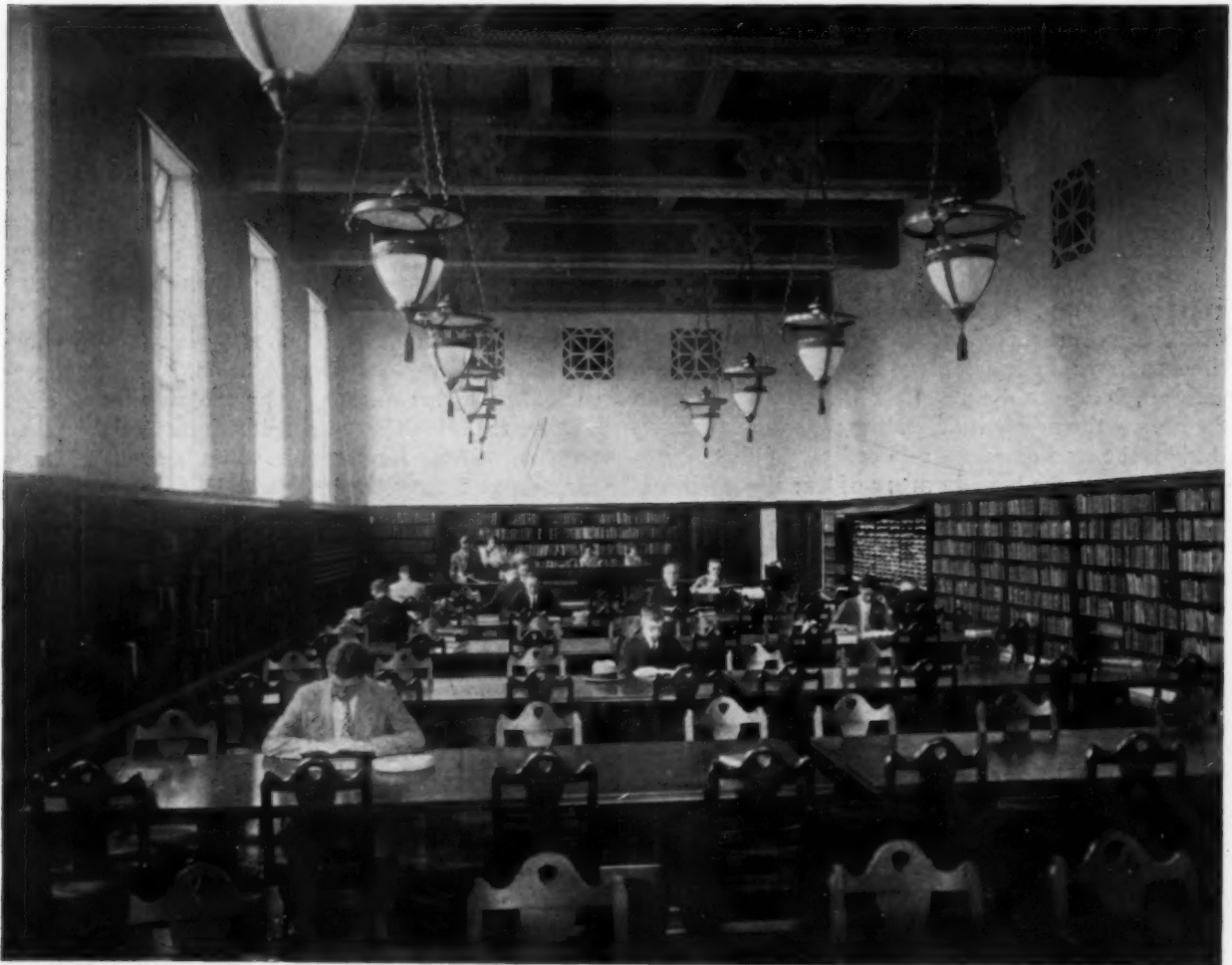


Photo. Mott Studio

Sociology Room, Los Angeles Public Library
Bertram Grosvenor Goodhue; Carleton Monroe Winslow, Associated

the carbon dioxide content of the air of a building as nearly as possible equal to that of good fresh air from the outside. It is this theory that is responsible for the laws in many of our states requiring 30 cubic feet of air per minute delivered into certain public rooms for each person in such rooms. This theory has been exploded by a number of studies and investigations, a description of which it is not possible to go into here. It is interesting on its own account.

As already indicated, the primary problem of ventilation is that of controlling the conditions of temperature, humidity, odors, and motion of the air so that the human body, especially the heart, the lungs and the skin, will function to the best advantage for health and efficiency. To bring this about with any kind of machinery requires constant observation and intelligence on the part of someone in every library building. In all too many of our libraries the ventilation service is a failure on account of improper operation on the part of the janitor or engineer in charge. Such machinery in its operation should be made as simple and as nearly fool-proof as possible. Every room in a library building should be equipped with an ordinary good thermometer, and there should be in the building in one or two places a hygrometer which in winter months

should never be allowed to register much below 50°. A self-registering thermometer properly placed is also a good investment to check up on the work of the heating plant every minute of the 24 hours. In a large library building an anemometer should also be available to test occasionally the amount of air being delivered to the various rooms, so as to be sure that everything is functioning properly. Where there is a high degree of human intelligence used in looking after these things, even with relatively poor machinery or apparatus, excellent results may be achieved; whereas the most expensive and up-to-date apparatus may prove a failure because of lack of intelligent operation. In our main library building in Grand Rapids last winter we got better results than ever before by having the fireman in cold weather go through the building every hour during the busy part of the day, reading the thermometers and observing the conditions in every room. If one room went below or above par, he took steps to remedy such a condition, restoring it to normal.

Good ventilation means maintaining indoors a supply of air which causes the body to function as nearly as possible as it does in approximately pure air out of doors. To achieve this result in a library building, or any large structure for that matter, ventila-



Photo. Baker

West Side Branch, Grand Rapids Public Library
Robinson & Campau, Architects



Photo. Paul J. Weber

Reading Room, Beebe Memorial Library, Wakefield, Mass.

Cram & Ferguson, Architects

tion must be subject to control so as to meet the varying conditions or needs of the situation. And all this means machinery properly laid out and installed. Proper control also greatly reduces the cost of operation, for then there will not be tons of fuel wasted by heating air and forcing it through the building when it is not needed or used. Small library buildings, especially in neighborhoods that are not congested, may get good results from intelligently operated natural ventilation. But where there are large crowds in small buildings at certain hours of the day, natural ventilation will fail to give satisfaction, especially when the air outside is stagnant. Small electric fans, such as are in common use in hot weather, may then be used as an inexpensive solution of this problem, and sometimes with good results.

The problem of lighting library buildings is in some respects less difficult than that of ventilation. However, we must take certain facts into consideration, facts which I believe have not yet been sufficiently considered in the planning for the lighting of library buildings. The first of these is that with the development of the electric light we have trained our eyes to require a great deal more light than was satisfactory to the average user 25 or 30 years ago. There was a time when 4- or 5-foot candles on the reading plane (that is to say, an ordinary library table) were considered adequate lighting. Today 10-foot is very generally required, and some of the newer library buildings have as high as 14- or 15-, although they seem to me to be overlighted. I am convinced, however, that some eyes require a great deal more light than others. It is, therefore, necessary in a library building to provide different quantities of light to take care of the differences in the eyes of readers. There are libraries where this has already been done, with very interesting results,

by delivering a greater number of foot candles to the tables at one end of the reading room than at the other. Thus needs of readers of many classes are met.

The problem of lighting is largely an engineering problem. If we know how much light is needed on the reading plane, it is a very easy matter to wire the building and to put in lamps, shades and reflectors to give that result. Every library, however, should have a foot candle meter to test the amount of light that is being delivered on the reading plane. The age of electric lamps and the accumulation of dust and dirt on them, on shades and on reflectors, greatly affect the amount of light delivered, sometimes by as much as 50 per cent. Laying out the lighting system so that it is relatively easy for the janitors to get to the lamps and reflectors for

frequent cleaning is a most important part of the work of the architect or lighting engineer. I am of the opinion that the psychological effect in a public reading room is very much better with semi-indirect light than with either direct or indirect lighting. I regard it as more satisfactory also in some other ways.

Natural light is, of course, to be preferred for reading rooms and work rooms, but when such rooms are open many hours of the day, artificial light must be largely used. In our cities very little can be done with the orientation of buildings so as to get into all the rooms the greatest amount of daylight possible, for so many of our streets are laid out according to the four main points of the compass. Orientation can frequently be worked out better on a college campus. For instance, a building facing one of the four main points of the compass will get less sunshine in all its rooms than if it were faced say southeast. Latitude and climate are also important factors in the ventilation and lighting of library buildings, but these cannot be gone into here.

Arrangement of stacks for the storage of books in the library should, I believe, depend entirely on artificial light. The windows in the average stack room of a library are wholly inadequate for lighting the center of the stacks, even on a bright and sunny day, so that artificial light must be used in any event. By eliminating the windows and the aisles that usually go along the walls, and by depending on artificial light and mechanical ventilation entirely, the capacity of the average stack room for book storage would be increased by approximately 20 per cent. The stack rooms are usually the most inefficiently lighted of any part of a library building. The light source is at the ceiling, and the farther a book is away from the lamp, say on a bottom shelf, the smaller the angle of light incidence, so that both

distance and this angle increase the difficulty of reading the numbers or the lettering on the backs of the books, especially when the books are somewhat worn from use. For the smooth running of the library it is of the first importance that books may be found readily and placed back on the shelves in the same way. This means adequate lighting as the first requisite for this work. It can be greatly helped by having the floors of the stack rooms of white marble or tile, or even painted white, so as to reflect the light to the backs of books as they stand on the shelves. A number of libraries have done this in recent years, having the shelves, walls, floors, ceilings, and everything about the stacks in white. In the reading rooms the tables should be as free from lighting fixtures as possible. The colors of the walls



Photo. Paul J. Weber

Reading Room, Williams College Library
Cram & Ferguson, Architects

and of the furniture have an important bearing on the general effect on the reader. The satisfactory combining of mere utility and lighting efficiency with general artistic effect presents an interesting problem for the library authorities and the architects to work out. It is a problem well worth the necessary study.

It has long seemed to me that it should be possible for the stacks to be wired so that an employee who is putting books back on the shelves or is getting a number of books for patrons should be able to throw a light switch with the foot rather than by hand, for it is extremely awkward to attend to these switches when one has an armful of books. This would enable such a person to have the hands entirely free for books. The lighting system should be installed so that it is easy to cut out light in the stacks when it is not needed, thus greatly reducing the cost of building maintenance. Large library stacks can easily waste more light than the rest of the building uses. In both ventilation and lighting, the cost of operation is an important factor. It is a well known fact that many elaborate and costly systems of ventilation are not being operated as designed because of the costs. Take the case of a large library building with one fan system for the ventilation of every room in the structure; all the air to be outside air,—

no recirculation; the building heated with the same fan system that ventilates it; air heated in zero weather to keep the rooms at about 70° Fahrenheit; half the rooms used very slightly many hours of the day; air delivered to them the same as to the rooms with many people in them;—all this results in most expensive operation and waste, for much cold air will be heated to a high temperature only to be forced out of the building without being of the slightest use to anyone. It is conditions such as these that lead engineers and janitors in charge of buildings to begin "monkeying with the machinery," and often on instruction from the boards of trustees!

Here are 14 points most to be remembered in designing ventilating and lighting systems for library buildings, all very well worth considering:

1. Supply the fresh, invigorating air that most normal humans crave, without "cooking" the life out of it by heating it to a very high temperature, thus destroying its invigorating feeling of freshness.
2. Deliver air in the proper quantities, without waste through supplying much more than is needed in some rooms and at the same time not enough in other rooms, because of the variation in loads in the different rooms. This is a highly important detail.
3. Humidify the air for the sake of the people



Photo. Kenneth Clark

Reference Room, St. Paul Public Library
Electus D. Litchfield, Architect

in the building and for the sake of the books, the humidity in the winter months to be about 50 per cent of saturation. An open steam jet in the fan room will produce fairly satisfactory results. Air washers not only humidify the air but they also free it from dirt. They are, however, expensive to operate and sometimes are troublesome in other respects.

4. Separate the heating system from the ventilation system,—use the "split" system. This makes possible the supplying of air in the quantity needed, and without heating it so as to destroy its freshness,—simply tempering it during cold weather.

5. Provide for easy, independent control from the room itself, of the amount of air to be delivered into that particular room from the ventilating fan system.

6. In crowded rooms, especially rooms frequented by odoriferous persons, move the air in vertical rather than in horizontal or semi-horizontal lines. This will not cause the spread of odors across the room to the annoyance of persons along the way.

7. Provide for natural ventilation,—windows,—as much as possible when there are only a few people in the room, reducing the cost of operation of ventilation system. Use of windows is often sufficient.

8. Provide, especially in a crowded room such as a filled lecture hall, for sufficient motion in the air

(without at the same time causing drafts) so that people have the sense of freshness in the air they breathe. This will keep them more alert and awake so that they will be able to get more or do more from their presence in such air. Such air ventilates the body and gives a sense of satisfaction akin to that which we feel when outdoors in a refreshing breeze.

9. In cities take the air for the fans from the roof of the building rather than from the street level, thus avoiding pumping into the building much dirt and dust. Air filters may be used to keep out much dirt, but their burden ordinarily will be less when the air is taken from the roof. Many library buildings are settling basins for the dirt in the air that is pumped into them. Air from a roof level is much cleaner.

10. Plan the lighting system to deliver without glare 10-foot candles to the reading plane, with provisions for more light for persons whose eyes require it. Use stronger lighting at one part of a room.

11. Plan a color scheme for the walls, windows, and draperies to give an artistic effect. It will attract readers and be more restful to all who use the room. Red is not a restful color to have in such a room, but there are other colors which possess just that quality.

12. Give special attention to the lighting of the book stacks. Here utility should be the first and

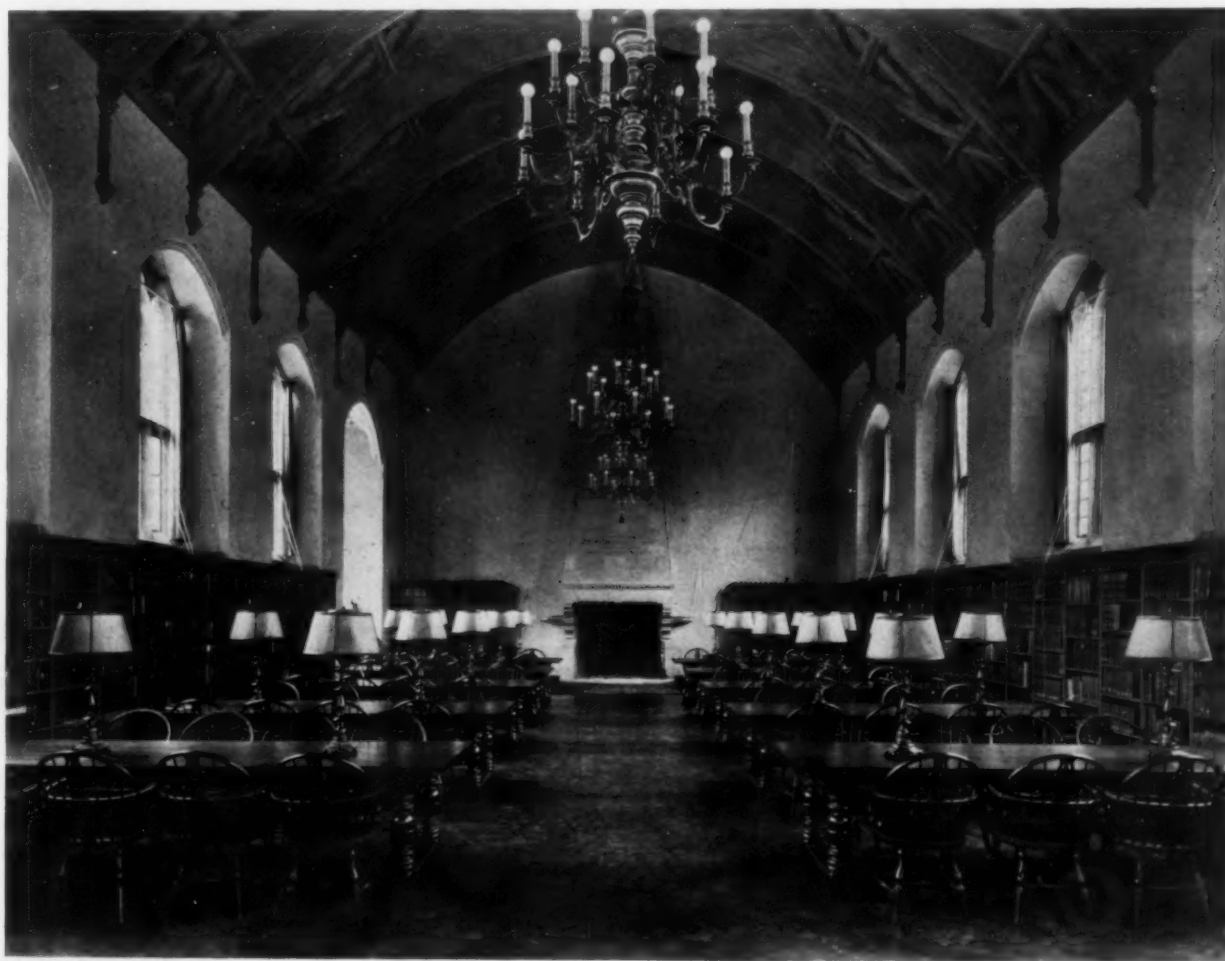


Photo. Elliott Studio

Main Reading Room, Elmira College
Coolidge, Shepley, Bulfinch & Abbott, Architects

last consideration. It is of the highest importance.

13. Have all lighting fixtures, switches, apparatus, etc., easy of access to both janitors and workmen. Electric fixtures that can be cleaned or adjusted only from the top of a 20-foot ladder which does not reach the ceiling will not get the attention they need.

14. Architects, librarians, and library boards should always keep uppermost in mind that the function of a library building is to serve human needs, and that it must be operated by average human beings. We must, therefore, adapt to the fullest extent possible, ventilation, lighting and everything else about a library building to human beings rather than expect human beings always to adjust themselves to the building. When all this has been accomplished, we shall have "humanized" our libraries.

The 14 points here given cover the considerations

of the ventilation and lighting more from the point of view of the readers and staff than from that of the technician. The human side is thus stressed in the hope that it may lead architects to bring this aspect of the problem to the attention of their consultant experts in either field so that each room will be considered as a special case, the comfort of the readers being the paramount objective. The scientific and technical attitude may need to be tempered with the human touch, and the cold factors of "cubic feet per minute" and "footcandles" should always be accompanied in the mind of the designer with the thought of the probable actual comfort of those who will use the building. Those who operate and control the ventilation and heating systems are not always as expert as could be wished, and it is therefore wise to consider them and to make their controls simple.

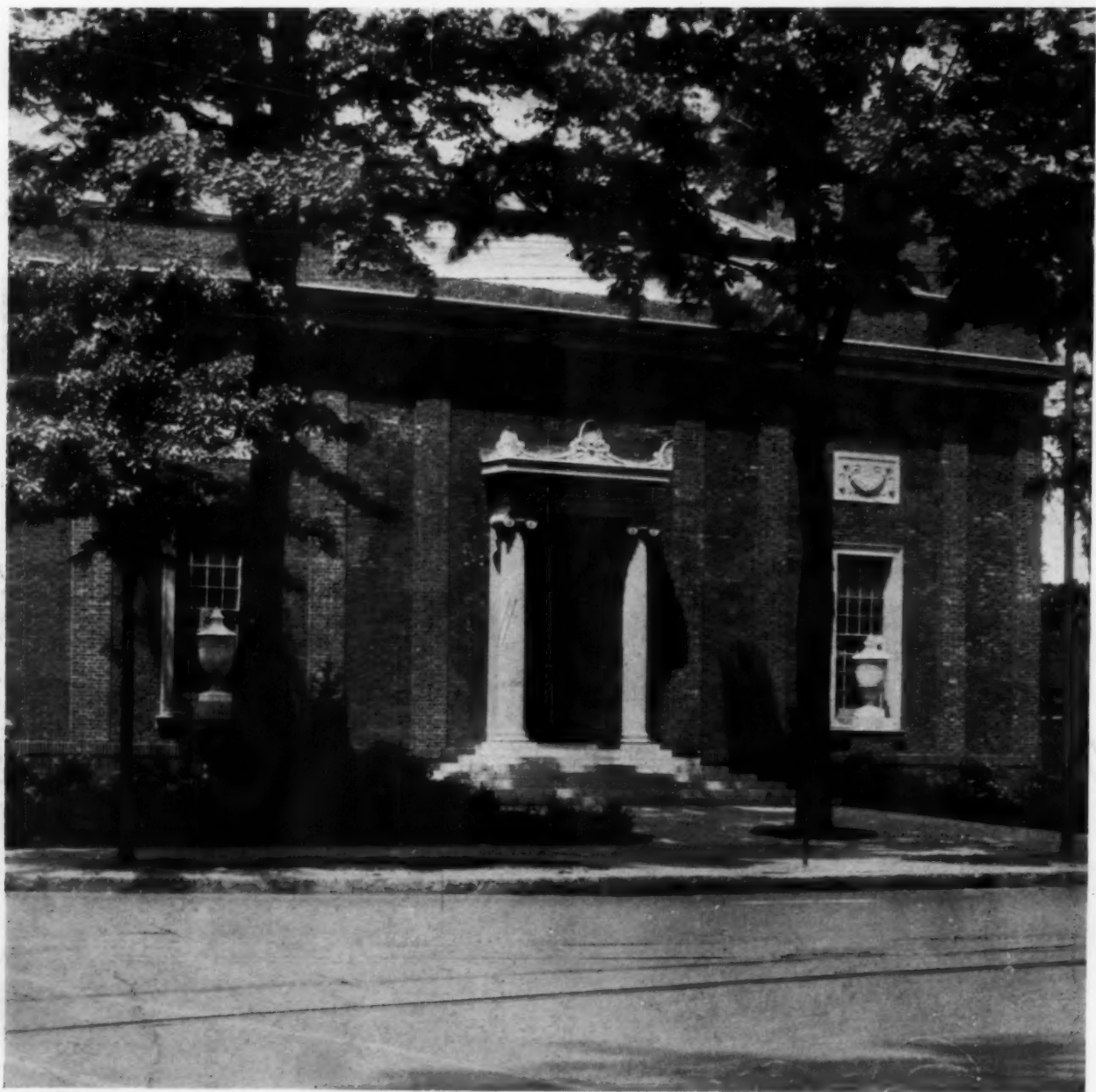
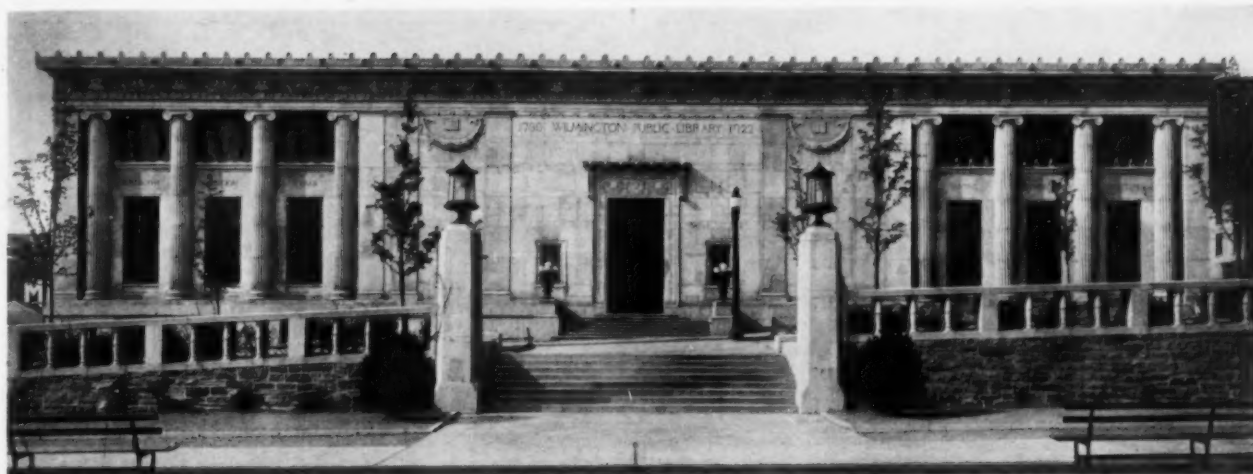


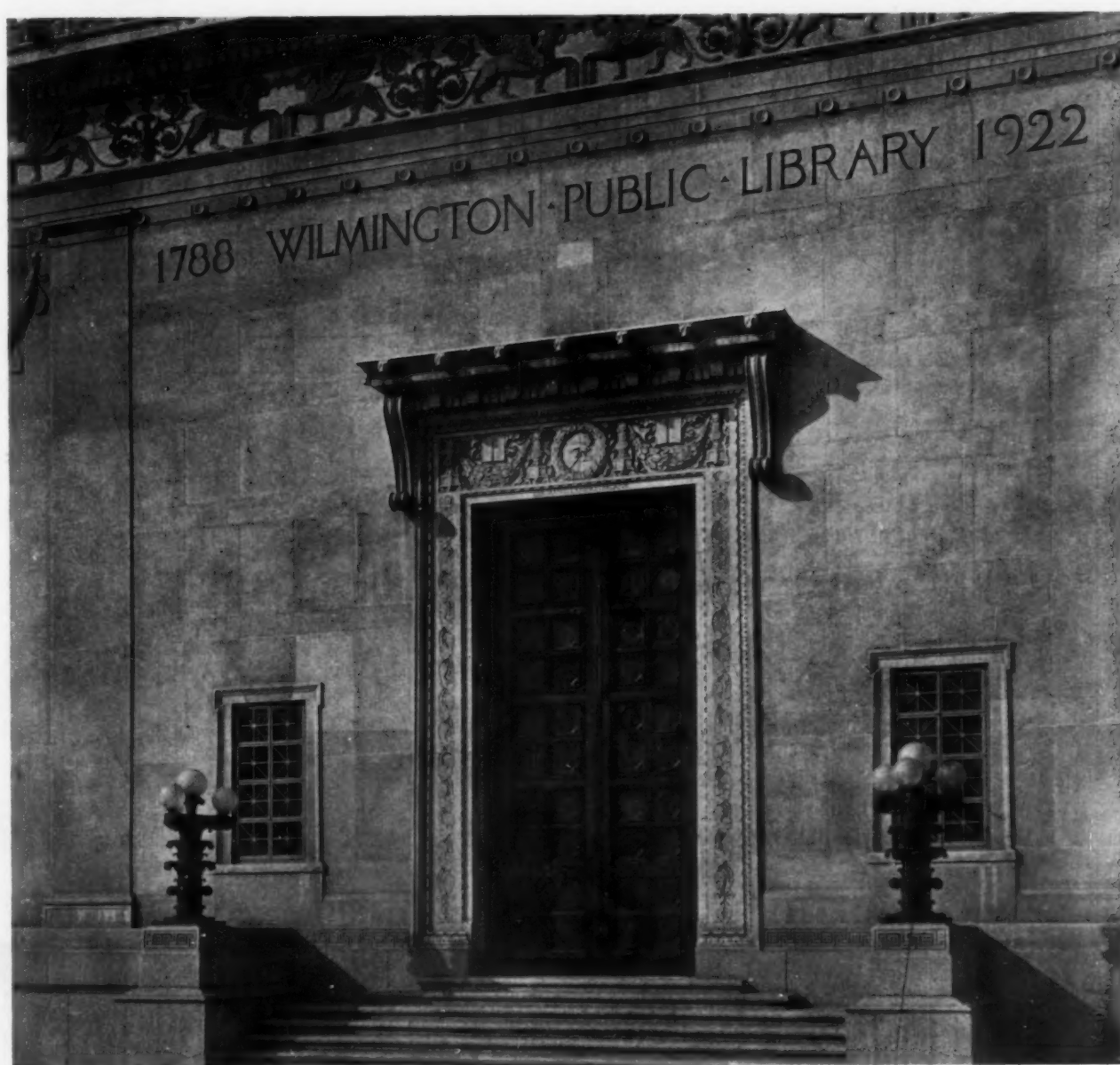
Photo. Richard Southall Grant

Library, Westfield, Mass.

Coolidge & Carlson, Architects; M. B. Harding, Associated



ENTRANCE FRONT



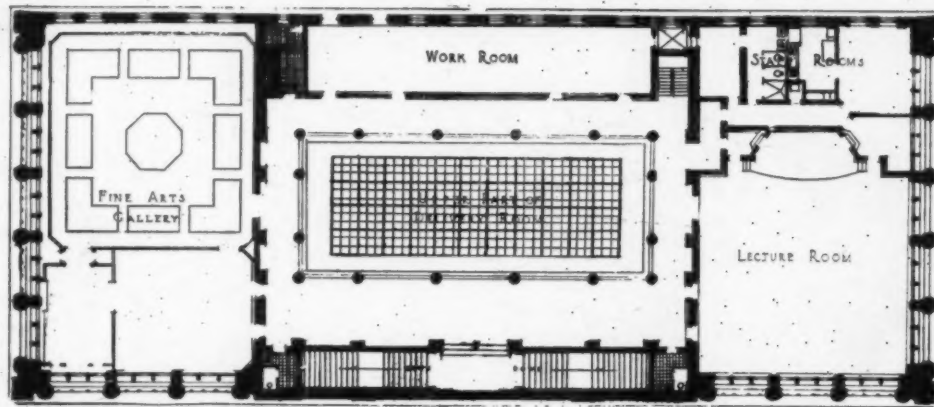
Photos, John Wallace Gillies

Plans on Back

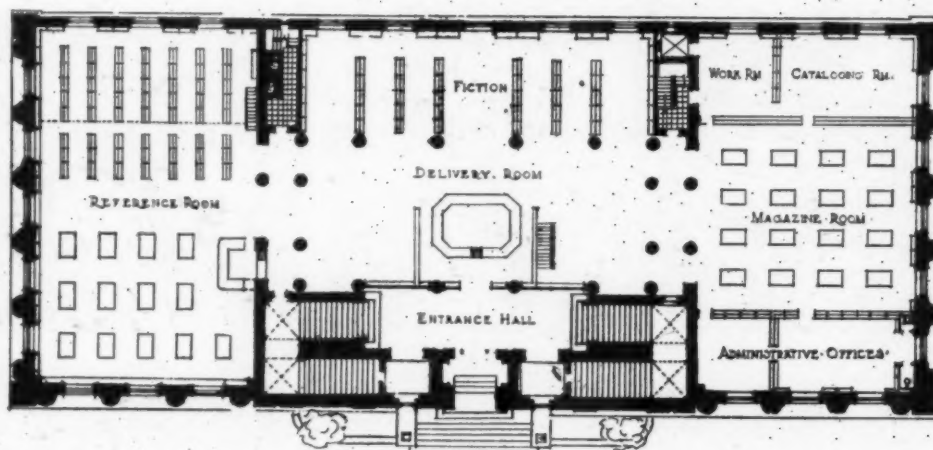
ENTRANCE DETAIL

PUBLIC LIBRARY, WILMINGTON, DEL.

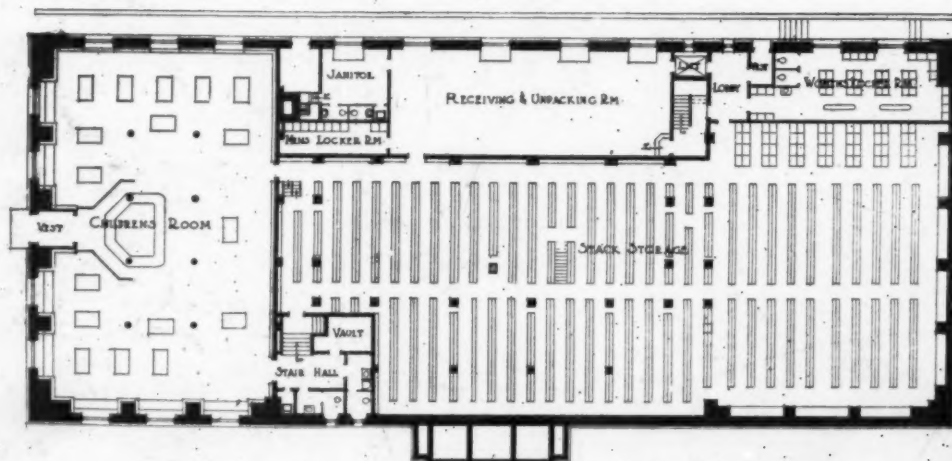
EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS



SECOND FLOOR



FIRST FLOOR



BASEMENT

PLANS, PUBLIC LIBRARY, WILMINGTON, DEL.

EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS



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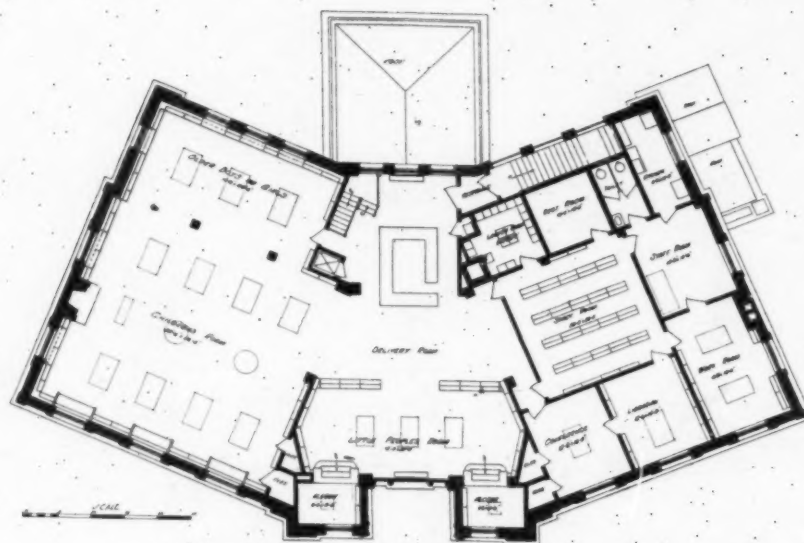


Plans on Back

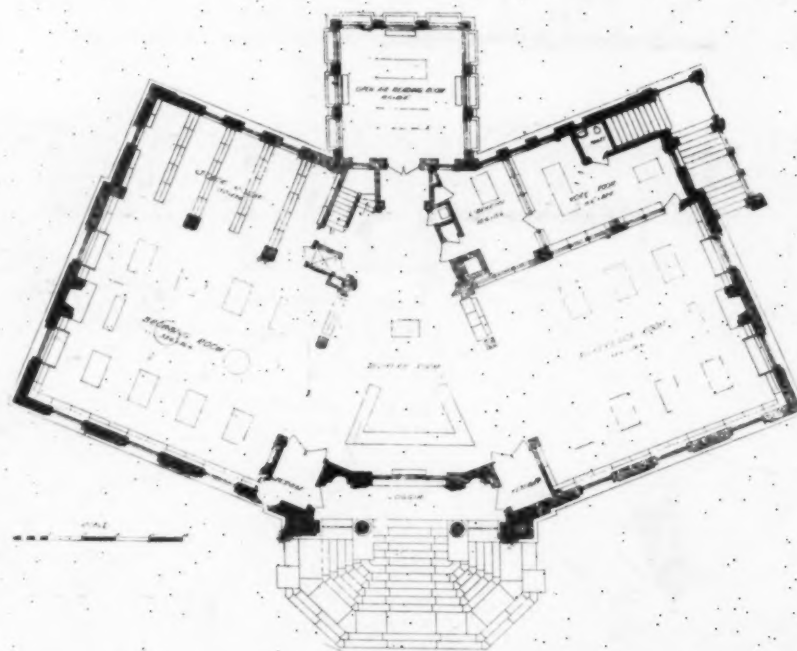
READING ROOM

MT. PLEASANT BRANCH LIBRARY, WASHINGTON

EDWARD L. TILTON, ARCHITECT



SECOND FLOOR



FIRST FLOOR

MT. PLEASANT BRANCH LIBRARY, WASHINGTON

EDWARD L. TILTON, ARCHITECT



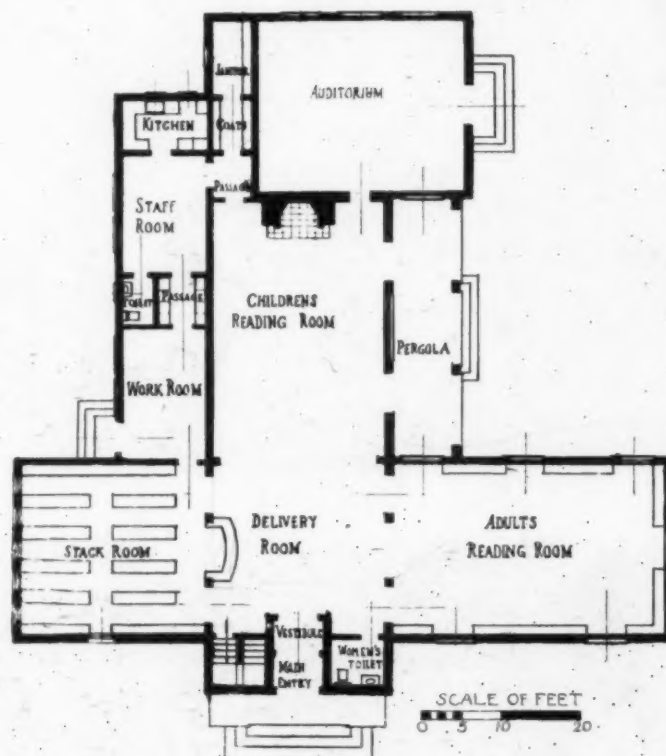
ENTRANCE FRONT



Photos, Miles Berne

Plans on Back

CHILDREN'S READING ROOM
WILMINGTON BRANCH LIBRARY, LOS ANGELES
MARSTON, VAN PELT & MAYBURY, ARCHITECTS



FIRST FLOOR

PLANS, WILMINGTON BRANCH LIBRARY, LOS ANGELES

MARSTON, VAN PELT & MAYBURY, ARCHITECTS



Photo. Dickson & Thurber

ENTRANCE FRONT

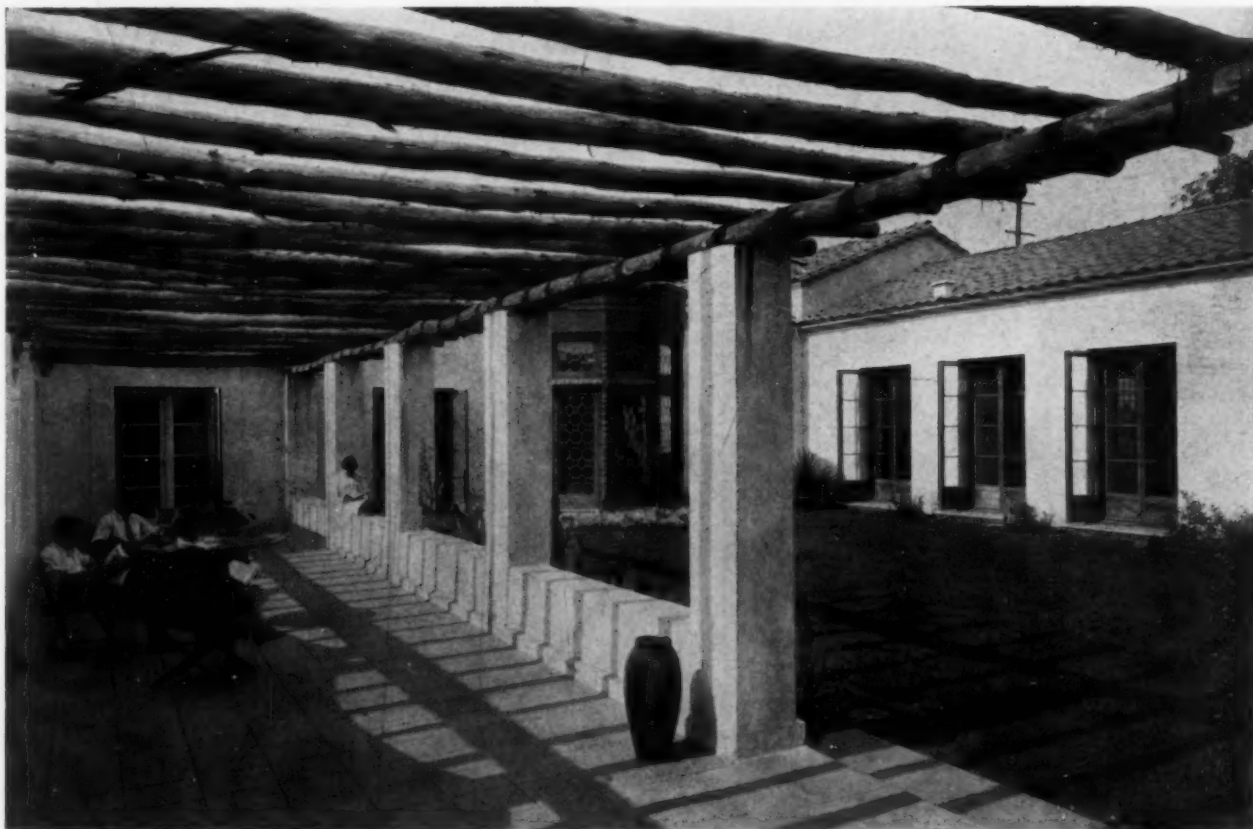
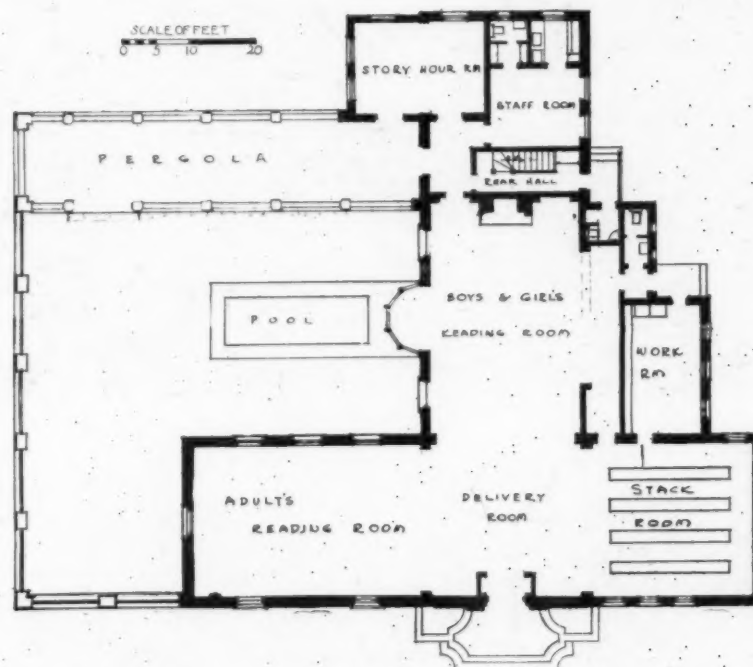


Photo. Paul Haight

Plan on Back

PATIO

HILL AVENUE BRANCH LIBRARY, PASADENA
MARSTON, VAN PELT & MAYBURY, ARCHITECTS



FIRST FLOOR

PLAN, HILL AVENUE BRANCH LIBRARY, PASADENA

MARSTON, VAN PELT & MAYBURY, ARCHITECTS



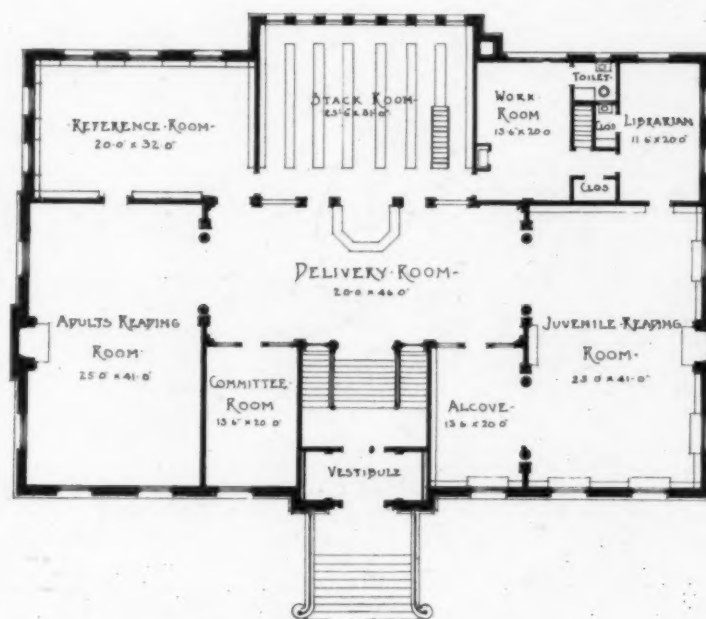
GENERAL VIEW



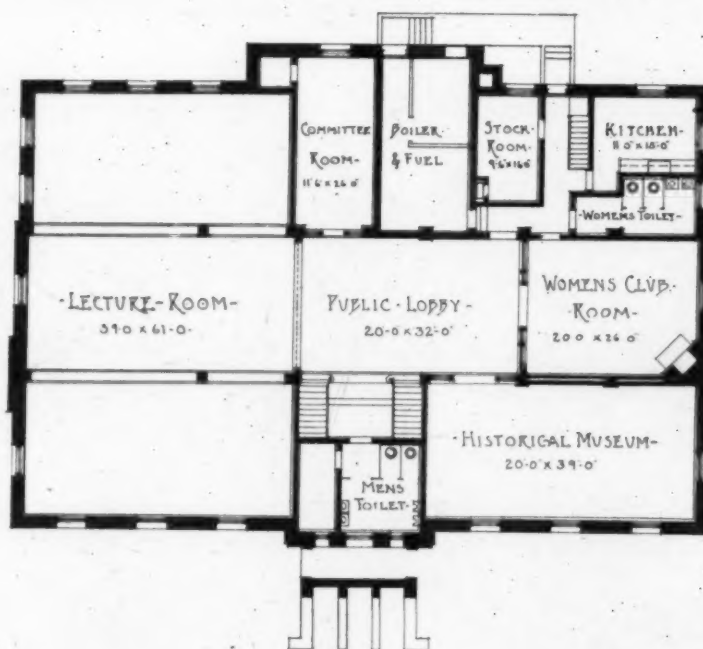
DELIVERY ROOM

Plans on Back

PUBLIC LIBRARY, LONGVIEW, WASH.
TORBITT, HOYT & HOYT, ARCHITECTS



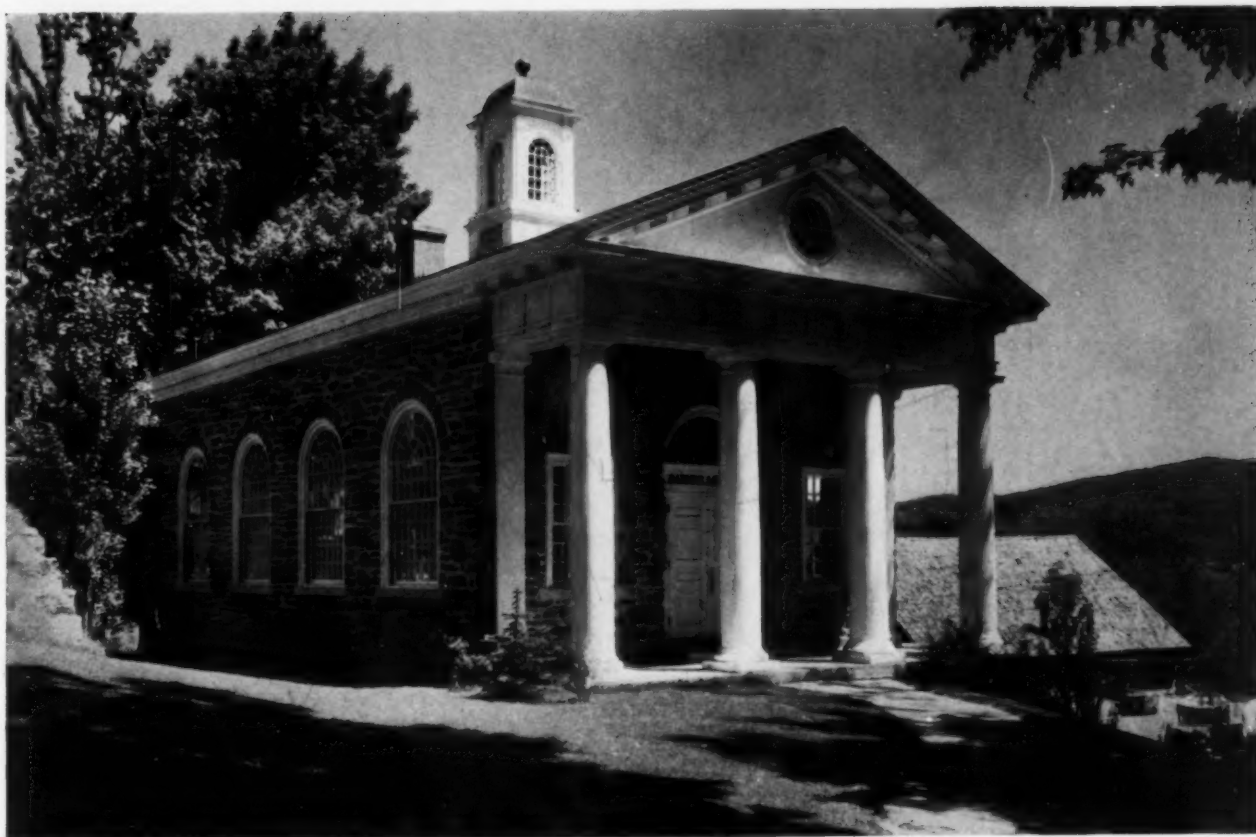
FIRST FLOOR



BASEMENT

PLANS, LONGVIEW PUBLIC LIBRARY, LONGVIEW, WASH.

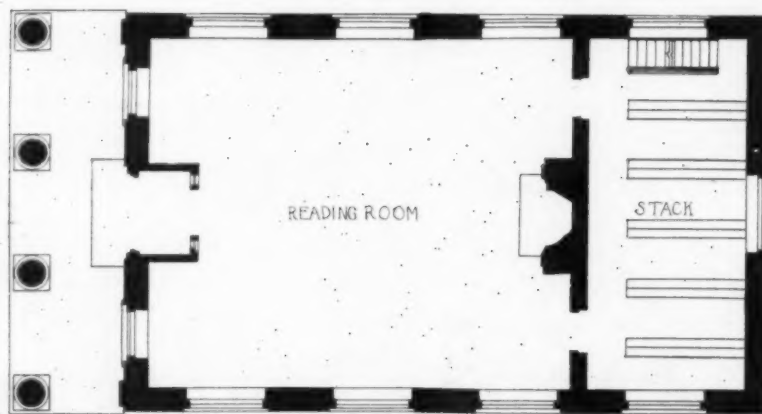
TORBITT, HOYT & HOYT, ARCHITECTS



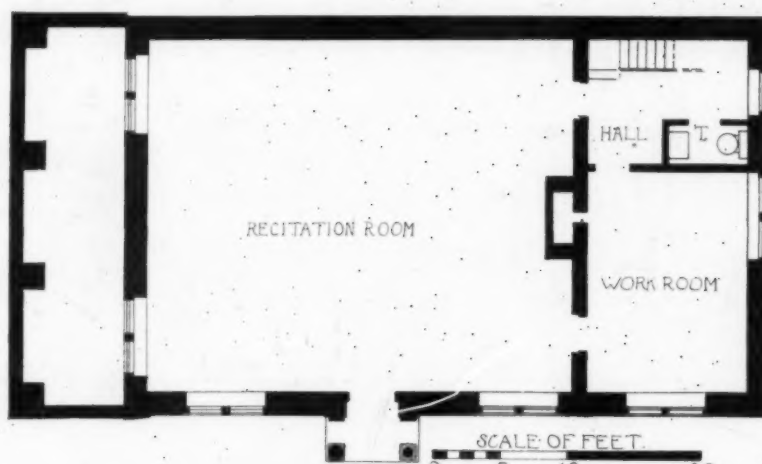
Photos. Paul J. Weber

Plans on Back

INTERIOR
LIBRARY, KIMBALL UNION ACADEMY, MERIDEN, N. H.
JENS FREDERICK LARSON, DESIGNER



FIRST FLOOR



BASEMENT

PLANS, LIBRARY, KIMBALL UNION ACADEMY, MERIDEN, N. H.

JENS FREDERICK LARSON, DESIGNER



ENTRANCE FRONT

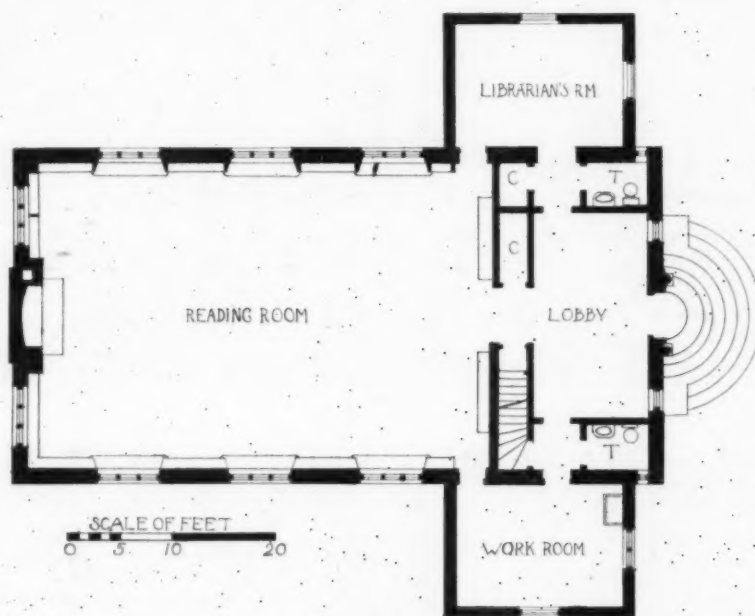


Photos. Tebbs & Knell, Inc.

READING ROOM

Plan on Back

CHILDREN'S LIBRARY, WESTBURY, N. Y.
PEABODY, WILSON & BROWN, ARCHITECTS



FIRST FLOOR

PLAN, CHILDREN'S LIBRARY, WESTBURY, N. Y.

PEABODY, WILSON & BROWN, ARCHITECTS



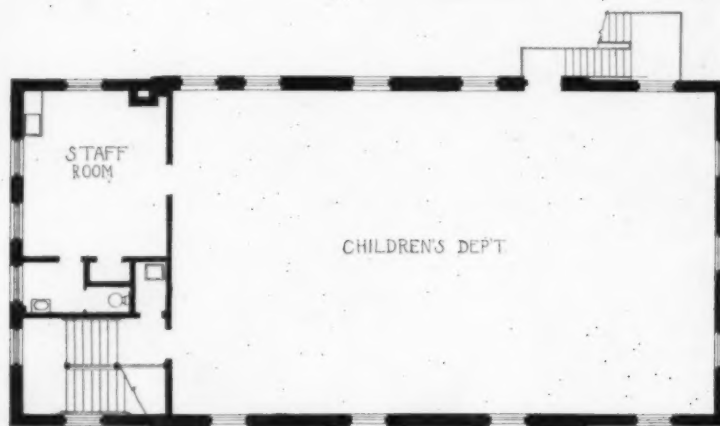
Photo, Burpo Co.

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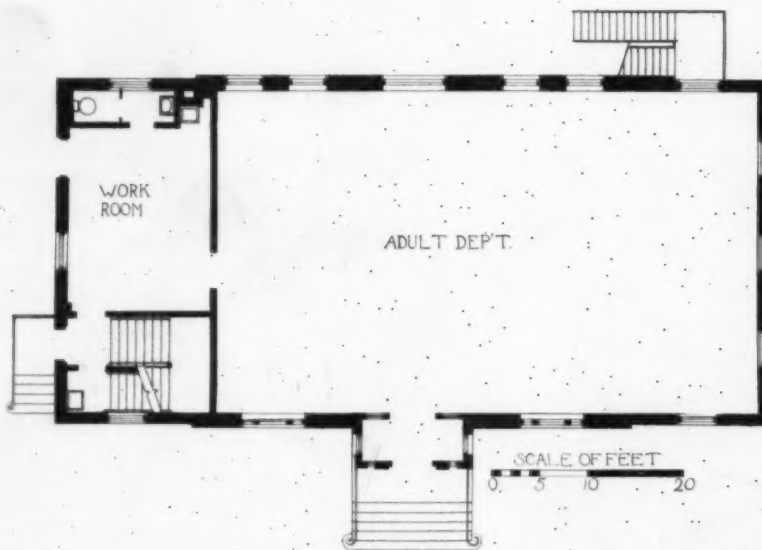


Plans on Back

VAILSBURG BRANCH LIBRARY, NEWARK
JOHN H. & WILSON C. ELY, ARCHITECTS



SECOND FLOOR



FIRST FLOOR

SCALE OF FEET
0 5 10 20

PLANS, VAILSBURG BRANCH LIBRARY, NEWARK

JOHN H. & WILSON C. ELY, ARCHITECTS

✓ Planning Art Museums

By LORIMER RICH

Of the Office of McKim, Mead & White

WE are accustomed to thinking of the three major arts as painting, sculpture and architecture, and we hear repeatedly of the necessity for collaboration between the painter, the sculptor and the architect. What greater opportunity can an architect have for the exercise of collaborative ability than in the designing of an art museum? Here he is confronted with the designing and erection of a building the very name and purpose of which constitute a challenge to his artistic genius, and the successful accomplishment of which is a permanent contribution to the cause of the arts. Here, in a building of appropriate design, he must create a proper and pleasing setting for painting, sculpture and examples of the numerous and varied minor arts.

Museum Functions. In attacking the problem of museum design, it is necessary first to obtain a thorough knowledge of the exact functions of the particular museum. These functions and activities vary considerably, and it is only in the larger museums that they all will be found. With the growing recognition of the desirability of cultivating the fine arts, we find the museums called upon to perform a multitude of services quite distinct from the original purpose of maintaining exhibition galleries for the public. There is an increasing demand from our industries for help in the designing of textiles, furniture, metalwork, ceramics and innumerable other objects. Study rooms, where careful notes and sketches of museum pieces may be made, are desirable, and this need must be satisfied. It is hard to dispense with a library of books, photographs and lantern slides. The lantern slides are usually circulated for lectures at schools and other institutions, and adequate provision for this work should be made. An auditorium in the building will be used for general art lectures and will also be used in conjunction with public school excursions to the museum. Considerable revenue may be derived from renting the auditorium for other purposes. For this reason, and because any meeting here might be at hours other than those during which the museum is open, it is well to place the auditorium so that it will have an independent entrance. It is not necessary that the auditorium have outside light, since practically all lectures given there will include stereopticon views or else require use of motion pictures.

General Plan. Broadly speaking, the basement or ground floor may be given over to the receiving and unpacking rooms; storage rooms, both for things in boxes and things unpacked; picture storage rooms; superintendent's office; heating and ventilating equipment; workshops; repair room; and toilets. These units might properly be on the ground or basement floor or on the main floor, depending somewhat upon

the size of the building and the ideas of the executives:—director's office, trustees' room, business offices, photographers' rooms, the docents' office, etc.

The chief problem, which must be faced first in designing a museum, is the general arrangement of the important units. In other words, the *parti*. This, of course, refers directly to the manner in which it is intended that the public shall pass through the museum. The entrance vestibule, check rooms, information desk, retiring rooms and turnstiles do not vary much in requirements from those in many other public and semi-public buildings and will not be considered in detail here. A perusal of the bibliography of museum planning and a study of the more important museums built in recent years indicate three definite schemes of circulation. The museums, with few exceptions, have made use of these in various forms: (1) The Basilica Type; (2) The Gallery and Corridor Type; (3) The Continuous or "En Suite" Type. Each of them has its own particular merits.

The Basilica Type brings the visitor directly into a large, high room, usually treated with some degree of architectural importance. Doors on the sides of this room open directly into the individual galleries. The galleries are usually inter-communicating. This plan scheme is direct and pleasant and allows for an efficient grouping of galleries of kindred subjects or of contemporary periods. The lighting of the side galleries can be very well handled. In the case of a one-story building, high side lighting may be obtained in the large, connecting rooms. In case the building is of two stories, top light seems to be necessary, and as will be more fully explained later, the writer feels that top lighting has many disadvantages. The basilica type has been used in various units of the Metropolitan Museum,—in wings J, K and F, which are respectively for Greek and Roman sculpture, for the Pompeian court and modern sculpture gallery, and for the wings of decorative art (page 556). As will be noticed, the basilica type of plan is likely to lead to some waste in planning when expansion takes place, this being one of its demerits.

The Gallery and Corridor Type considers from the very beginning that a unit consists of a gallery and a corridor, instead of a gallery alone. This accessibility of each gallery to a corridor with the complete independence of each gallery from every other gallery has much to be said in its favor. When it is considered that a museum is a building to which the public comes to view various objects, one realizes how important it is that the approach directly to any particular room be kept clear. Often a class must be taken to a room, and possible confusion and annoyance may be spared adjoining galleries if it does not have to pass through them on its way to and

from its destination. With this type of plan it is also possible to close off easily any particular gallery for repairs or for re-arrangement. Where the corridors are adjacent to the galleries, the gallery sizes may be readily changed by moving partitions to suit some specific purpose without disrupting the general plan. The Freer Gallery in Washington is an example of this treatment (Plate 122). Here it will be noticed that, with the exception of two galleries, every gallery is entered directly from some corridor.

The Continuous Type plan, as its name indicates, refers to that plan which places one gallery next to another and forces the visitor to go through one or more galleries in order to reach any particular room. For a fairly small museum, such as the Cleveland Museum of Art or the museum proposed for Wilkes-Barre, this method undoubtedly works very well. Considerable space is saved, and there is practically no resultant loss of efficiency. In fact the very desirable "intimate" quality of the rooms is emphasized; but it must be remembered here that no great number of visitors is likely to come at once, and that there is no large percentage of strangers among them.

In general, the writer feels that this "en suite"

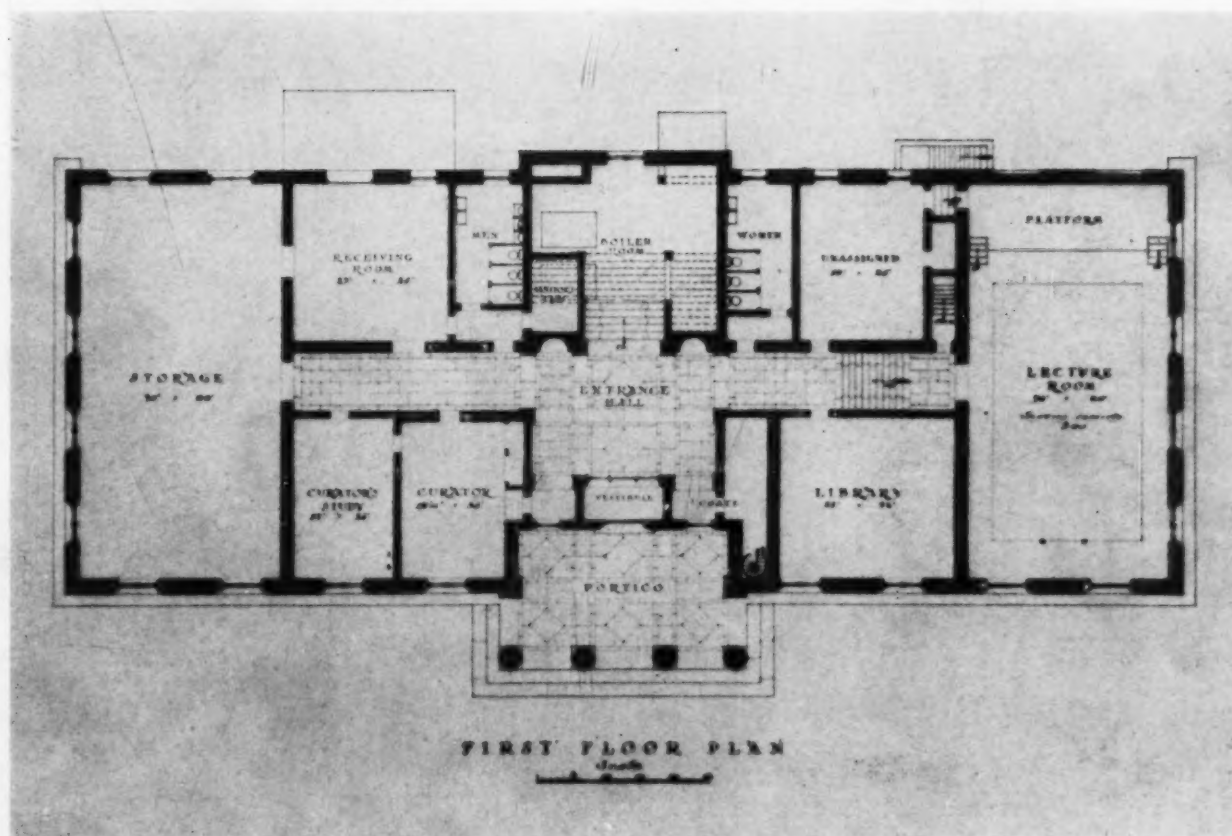
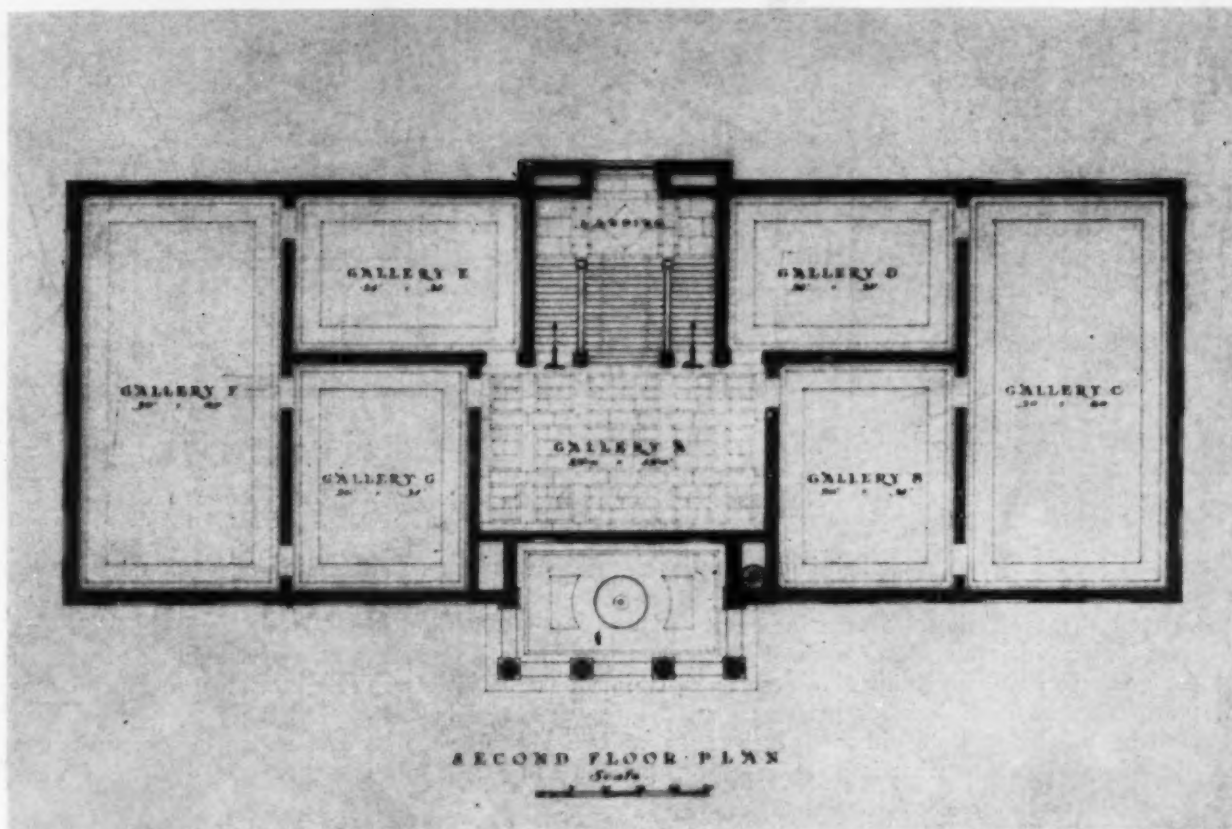
type of plan is best adapted to the smaller museum for several reasons. No matter how cleverly the units may be worked out, there always seems to be a possibility of a more or less serious blocking of the circulation in case some one gallery is closed for any reason. For strangers particularly, it is confusing to find one's way about, and without corridors it is difficult to direct people to a particular gallery. Also, if a visitor comes to the museum for the definite purpose of studying any particular exhibit and must traverse several other exhibition rooms first, he too often lingers by the way and either never reaches his goal or finally arrives so satiated with the other exhibits that his zest for examining the object of his original quest is gone.

Lighting. The problem of lighting in a museum must be answered for three different subjects,—paintings, sculpture, and objects exhibited in cases. Ideal lighting for one might not be ideal for the others. The whole subject of the lighting of exhibition galleries is intricate and complicated, and a subject upon which there is no final agreement, even among those who have given much study to the question. Three methods of lighting generally used

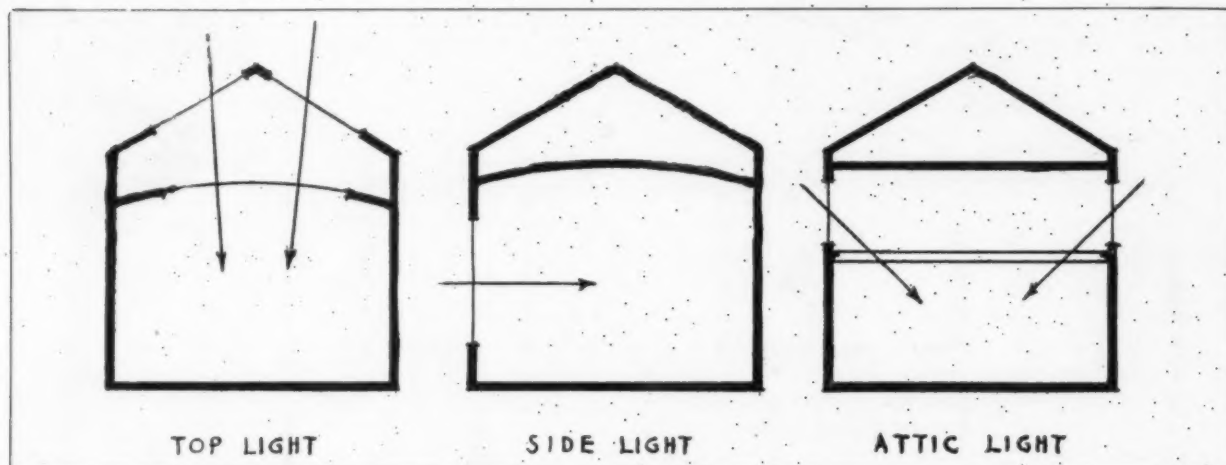


From Drawing by Shell Lewis

Proposed Art Museum, Wilkes-Barre
Charles A. Platt, Architect



PLANS, PROPOSED ART MUSEUM, WILKES-BARRE
CHARLES A. PLATT, ARCHITECT



The Three Usual Methods of Lighting

in galleries are top lighting, side lighting, and attic or clerestory lighting. These three terms may best be understood by referring to the accompanying diagrams, which illustrate use of each of the types.

The great variety of lighting schemes used and the various relations of light or glass area to the area to be lighted indicate either that there is a conflict of opinion as to what is good light or that

we have not reached a clear understanding of the subject. Given ideal conditions of control and source, it is probable that painters and sculptors would disagree as to the correct lighting of a given subject. It does seem, however, that in general, museum rooms have too much light. The glass area is likely to be too great, covering in some instances the entire ceiling. The color and texture of walls



Pompeian Court, Metropolitan Museum of Art, New York

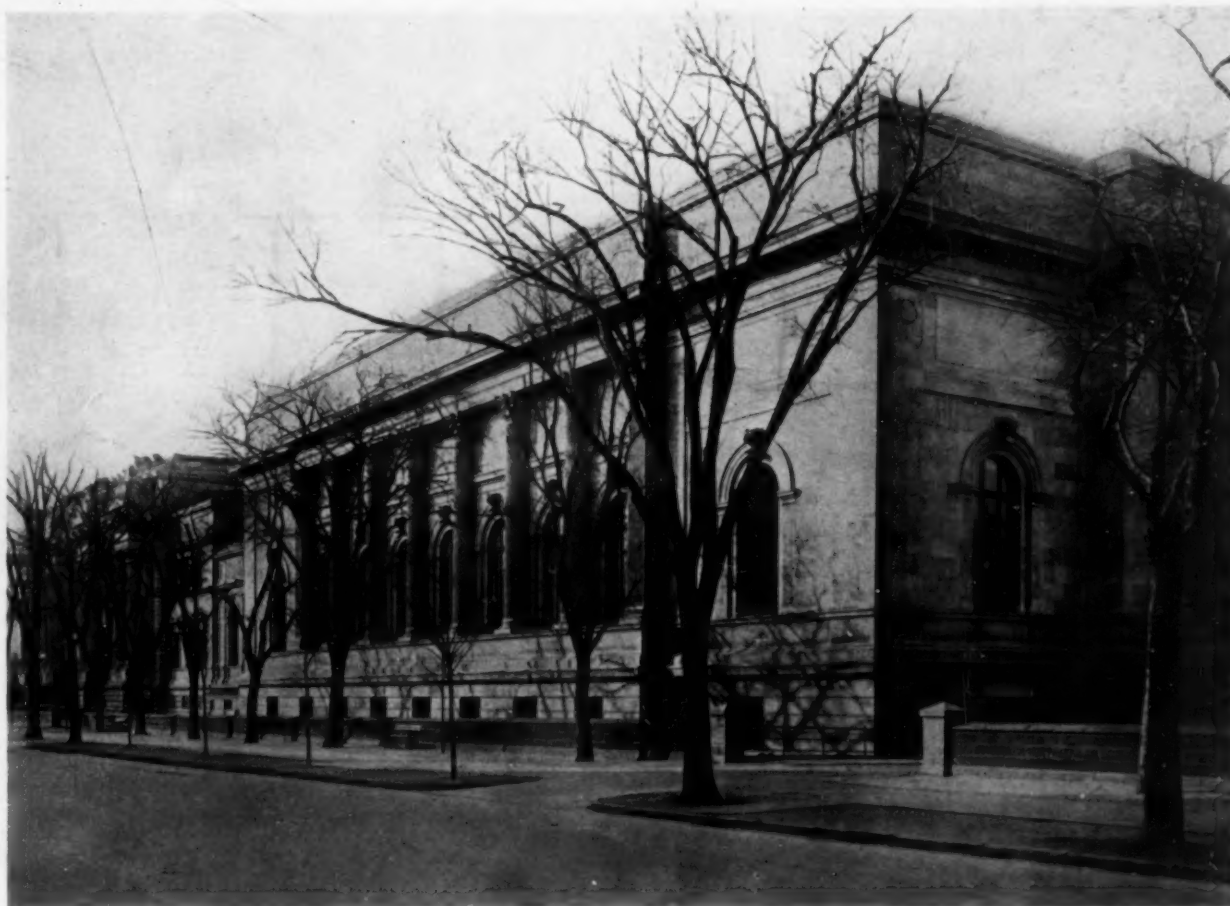
McKim, Mead & White, Architects

and floor also affect directly the impression of light in a room. Usually the floor should be dark in tone, and the walls should not be much lighter than the pictures to be exhibited. Walls and floors which are light in tone or of a glossy surface will reflect instead of absorb light, and they detract from the comfort of the room. So far as is practicable, it should be decided in advance what particular exhibits are to be placed in the respective rooms. It is only in this way that satisfactory results can be obtained, since the use of a room determines its plan.

The most general method of lighting picture galleries at present is by means of top light. Usually there is a ceiling sash, and above that is a skylight which admits the light to the ceiling sash. Top light does allow for a maximum hanging capacity. If the ceiling light is carefully designed and equipped to control the light at all times of day, pictures can be very well lighted, and unpleasant reflections practically avoided. There does seem, however, to be unanimity of opinion that top-lighted rooms are more or less unpleasant and gloomy. Top light is not natural in a room supposedly composed of four walls and a ceiling. There is apparent an indescribable lack of cheerfulness which is somewhat deadening. The ceiling light, to be most efficient, must be at least 14 or 16 feet above the floor. This in itself makes the room high, and with only one row

of pictures hung, it leaves much blank space above, which only tends to add to the mausoleum-like character of the top-lighted room. It should further be borne in mind that if a top-lighted gallery is too long, the glare from the ceiling will enter into the angle of vision of the visitor and give an uncomfortable feeling of there being rather too much light.

Top-lighted galleries must, however, be used at times, and where such is the case, there are several points which should be carefully considered. The ceiling sash is generally suspended upon hanger rods, and these in turn are connected to trusses which also support the skylight. Care should be taken to keep the bottoms of these trusses at least 5 feet above the glass, as otherwise the shadows of the lower members of the trusses upon the glass will be visible from below. Provision must be made for the cleaning and replacing of the individual ceiling lights. This can best be done by providing tracks to the under sides of the trusses, on which there may be suspended movable platforms which will run along about 1 foot above the glass. The glass itself should be wire glass and should be made of white metal instead of the ordinary green with which most glass is tinted. It is usually of a slightly rippled surface—just enough so that one cannot see the trusses, etc., through it. The glass sections themselves should not be larger than 2



North Wing, Metropolitan Museum of Art, New York
McKim, Mead & White, Architects

feet square because of the difficulty of handling and the increased liability of breakage. The usual practice is to support this glass on a T-bar section and to insert small clips occasionally so that the glass will not rest directly on the T-bar flange but will be about $\frac{1}{8}$ -inch away. This gives a small opening for air to circulate into the space above, and it greatly helps the efficiency of the heating and ventilating system provided for the galleries.

The artificial lighting of a top-lighted gallery is accomplished by means of electric reflectors arranged above the ceiling sash and disposed of in such a way that an even, well distributed light is secured in the room below. Correct results in this work can be obtained only with the aid of a competent lighting expert and actual field tests to determine the proper number and locations of lights in each gallery, since no two galleries are quite alike.

Side lighting is much used in museums, and unless the windows are too low, it is quite satisfactory. For the exhibition of sculpture and objects in cases, it is unmistakably the best system. With side-lighted galleries the light is strong and natural and comes from a very natural source, which adds greatly to the cheerful atmosphere of the room. Contrary to general belief, it is perfectly possible to utilize the blank spaces on the window side of such a gallery, and paintings and sculpture may be

well lighted here by means of the light reflected from the other walls and the ceiling. The best results with side lighting are obtained when the windows do not come too near the floor. They should stop well above the eye level. In the new galleries of modern sculpture at the Metropolitan Museum the exterior effect required that the sills of the windows be fairly near the floor. The writer has noticed, recently, however, that all of these windows are now kept curtained up to a height of about 8 or 10 feet from the floor, and that with this arrangement a very pleasant result is obtained. If side light is used, it should be from only one side of the room to obtain the greatest efficiency in lighting.

Attic or clerestory lighting is thought by many authorities to most nearly approach the ideal. It is high side light,—the same as is used by the artist in his studio,—and as the light by which, often a work of art is produced, it most assuredly should be the best light in which to view the finished work. This method introduces the light near the ceiling, and at the same time has none of the disadvantages of top lighting. Many of the most successful and most beautifully lighted rooms of the Old World have attic lighting. In a room with high side light there is the least possible annoyance from glare. The sources of light are well above the range of the eye in any except the largest rooms, and even then



Photo. Kenneth Clark

Gallery Showing Usable Corners; Freer Gallery of Art, Washington

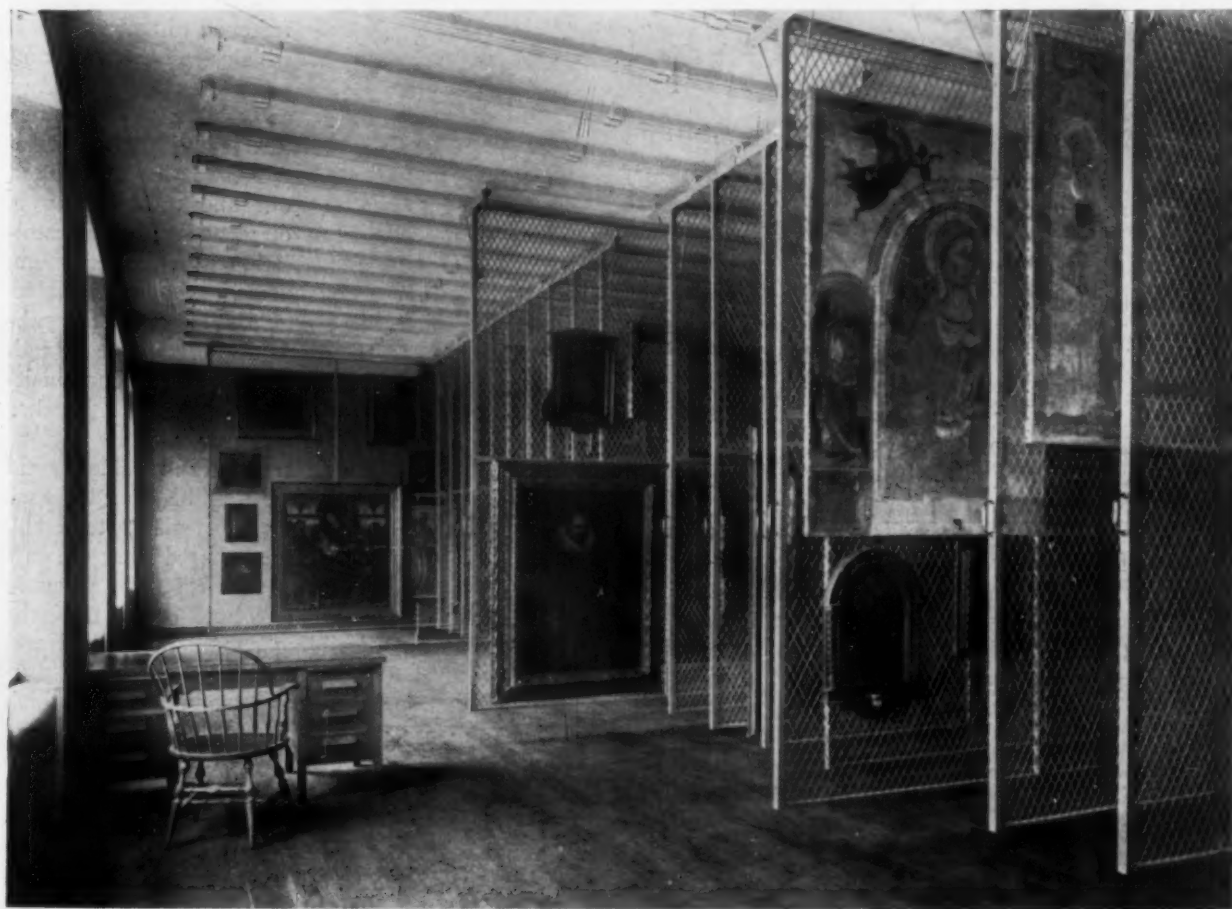
Charles A. Platt, Architect

the depth of wall will largely obviate glare. It must be borne in mind, in an attic-lighted room, that the pictures should be hung low enough so that there will be no reflections from the high windows on the opposite wall. Attic lighting allows a maximum use of the wall space for the hanging of exhibits. Care must be taken, however, that cases with flat tops are so placed that there will be no awkward reflections from the high windows.

Interior Decoration.—Both side-lighted and attic-lighted rooms allow the ceilings to be developed in some artistic manner, which is naturally more difficult in a top-lighted room. The treatment of museum galleries from a decorative point of view seems to have been neglected in this country. Yet some of our most pleasant memories of European galleries are those of old Italian palaces with their rooms converted into galleries. Here we see exhibits of the different Italian periods set in rooms with painted ceilings, agreeably side-lighted, with plain, rich, light-absorbing materials on the walls, and we get a feeling that we are seeing the art treasures at their very best. After all, to give the most agreeable impression, a painting, piece of sculpture or a piece of furniture must be exhibited in as nearly its original surroundings as possible if it is to convey the impression that its maker intended. There has been some tendency on the part of museum curators

to group exhibits of a like character together in order to create an air of unity and harmony, but this does not seem to have been carried into the architecture and decoration of the gallery itself. A very splendid example of paintings exhibited in their historical setting is that of the gallery of Italian paintings in the Cleveland Museum of Art (page 560). The visitor notices also the fine dark wall covering, which adds so much to the enjoyment of these pictures. Several plain wooden benches of Italian design, for the use of visitors, instead of the chairs, might help, giving atmosphere to this room.

Another very pleasant example of decoration which aims to give the exhibits a proper and historical background is the recently completed Pompeian court in the new wing of the Metropolitan Museum (page 556). Here a Pompeian court was created with all its brilliance of color. The large panel tones are a Pompeian red, as also are the lower parts of the columns. The wainscot and floor are black. This gives to the whole court the old Roman and Pompeian atmosphere which is so favorable to the exhibition of Greek and Roman bronzes and marbles. A very definite impression of a certain period of art is created here and to much greater advantage than if these various objects were exhibited in their usual cold, neutral backgrounds in a room utterly devoid of any memories of Greece



Storage Racks Which Allow Picture Study; New Fogg Museum, Harvard University
Coolidge, Shepley, Bulfinch & Abbott, Architects

or Rome. The educational value of an exhibit in imparting to the public the worth of any art object will be greatly increased if a historically correct background is provided, and this need not be difficult.

Galleries should be kept as small as possible. This gives a greater feeling of intimacy and restfulness. There are some few pictures and groups of sculpture which must be viewed from a distance, but these can be taken care of in special locations. The galleries should also be kept as low as is practical and at the same time obtain good light. In general, the rooms should be proportioned to the objects which it is intended to exhibit in them. Very small objects, such as prints and etchings,—things small in themselves and intended to be seen at close range,—should be in the smallest rooms, rooms of from 8 to 10 feet high, and there should be reflectors around the ceilings about 18 inches from the walls which will cast concealed light on the prints. The walls of such rooms for the exhibition of prints are usually sheathed with matched soft wood and then covered with some coarse fabric. This al-

lows the prints to be easily hung at various heights by simply tacking through the fabric and into the wood. A very good method for hanging larger pictures in the galleries is to secure a Z-bar to the masonry wall in such a manner that it will form the bottom member of the cornice. A hook is then inserted over the top of the Z-bar. The hanging of pictures in the corners of galleries is often troublesome. This can be avoided by cutting off the corners of the gallery with a 45-degree corner, which should not be less than 4 feet in width. The surface thus created makes an admirable space for an exhibit, its form and location giving it importance.

Care should be taken to see that the positions of all push-buttons, thermostats, register faces, etc., are carefully studied in order that they do not interfere with the exhibits, and also that their positions may be such that they will look as well as possible. All windows should be equipped with blinds which roll up at the bottom, in order that the low light may be shut off when desired. Radiators should be enclosed or concealed wherever possible. They are unsightly and collect and circulate dust. The

floor should be dark in tone. Marbles or a medium dark terrazzo are good. Wood floors are sometimes difficult and expensive to maintain. The Metropolitan Museum has had very satisfactory experience with a heavy cork tile floor, laid herringbone with strips about 2 feet long. This has the advantage that worn places can be easily replaced at little expense, and floors in certain places wear out quickly.

Most museums have many paintings which either for lack of hanging space or other reasons are not on exhibition. To have these paintings readily available for inspection has been a serious problem. Several museums have lately used a very ingenious method of storing these pictures and at the same time having them at hand for study. Metal screens, covered with heavy wire netting, are suspended vertically at right angles to the walls in the storage rooms. The pictures are fastened to these frames, which are on tracks, and placed as closely together as possible. When a picture is desired, the frame which carries it is pulled out and the painting is on view. With this installation in a lighted room,

every picture in the collection is at once available.

Too much emphasis cannot be laid upon the subject of seats. Most museums do not provide enough comfortable seats. The pleasure of museum visiting will be greatly increased if plenty of benches and seats are provided in the centers of the various galleries. Light chairs that are easily movable should be provided also, so that they may be placed before any particular object that a visitor wishes to study.

Finally, it should be remembered that an art museum is a place to which people go for pleasure as well as for study. The whole sojourn of the visitor while in the building should be studied and made as enjoyable as possible. He should be conscious of small and intimate rooms, rooms which welcome him and make him feel at home. There should be no cold, forbidding, architectural halls in which one does not dare speak above a whisper. The light should be pleasant and soft, and the walls and floors should be rich and restful. In fact the entire interior of the building should be a background and setting worthy of properly displaying its art in a personal, satisfying, and friendly manner.



Gallery of Italian Painting, Cleveland Museum
Interior by Arthur Loomis Harmon, Architect

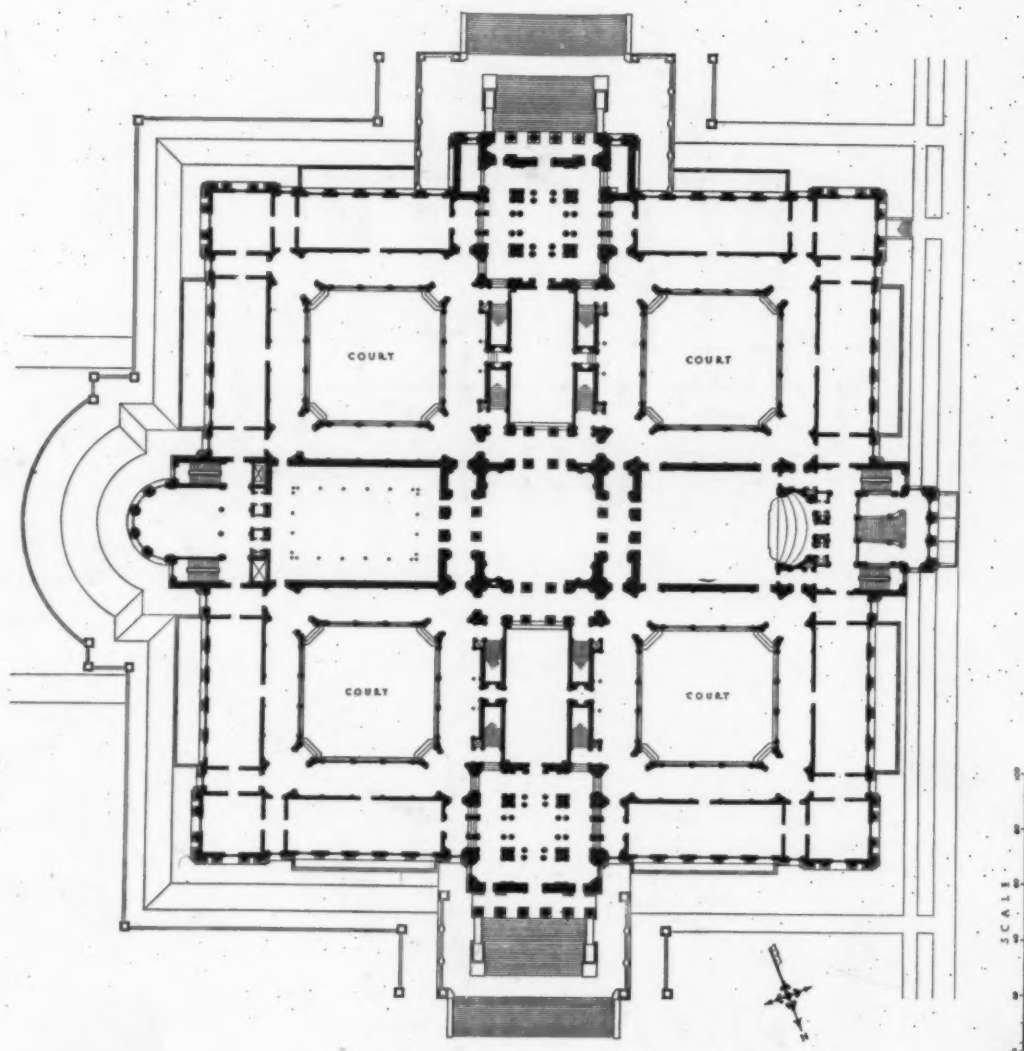


ENTRANCE FRONT



Plan on Back

CORRIDOR OF SCULPTURE
BROOKLYN INSTITUTE OF ARTS AND SCIENCES
McKIM, MEAD & WHITE, ARCHITECTS

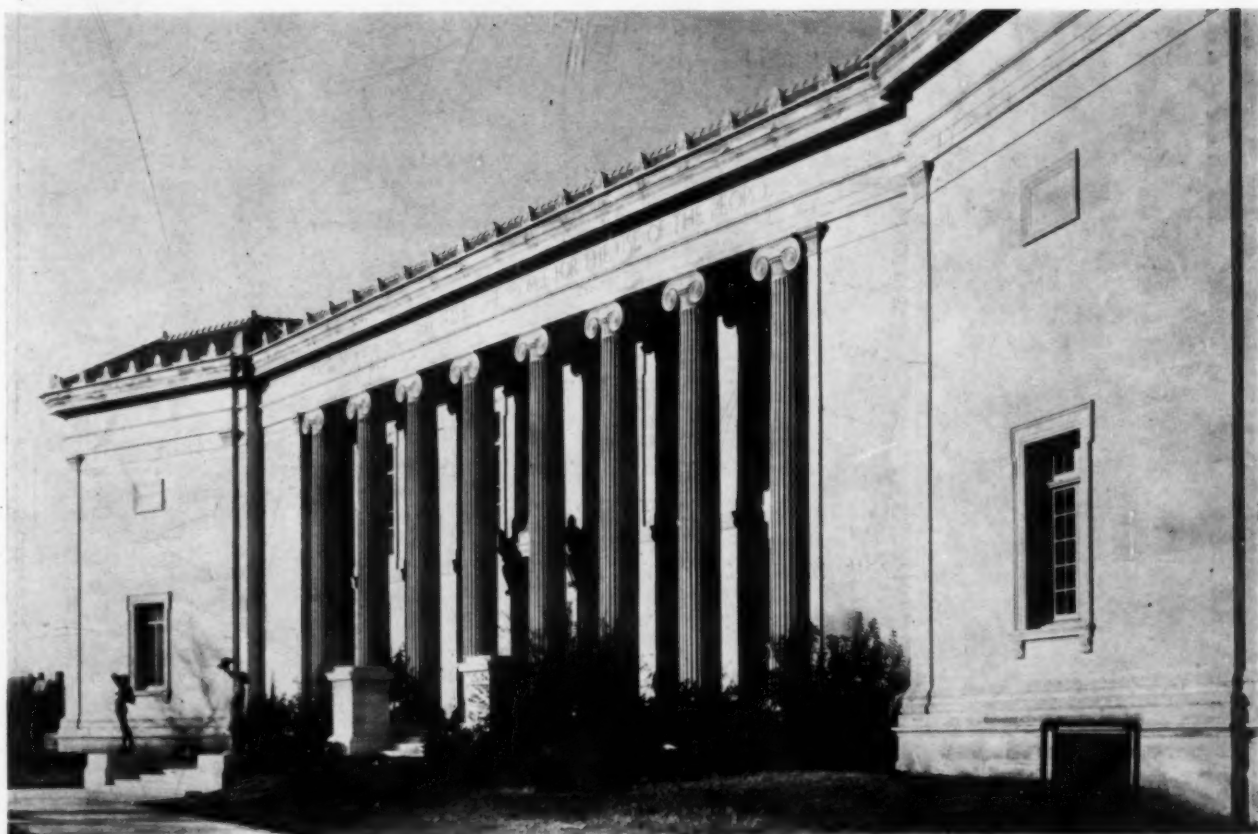


PLAN, BROOKLYN INSTITUTE OF ARTS AND SCIENCES

McKIM, MEAD & WHITE, ARCHITECTS



ENTRANCE FRONT

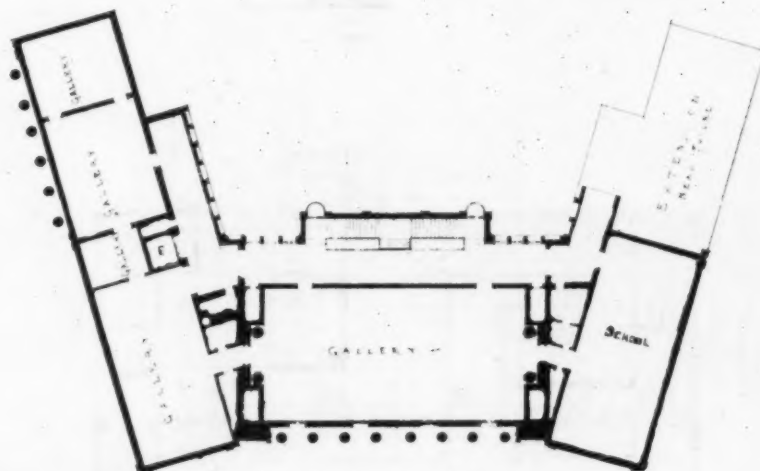


Photos. Edison Studio.

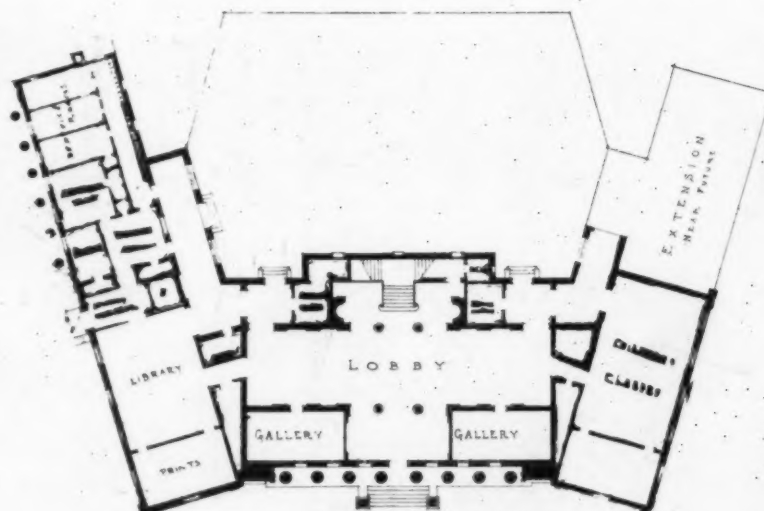
PERSPECTIVE

Plans on Back

MUSEUM OF FINE ARTS, HOUSTON, TEX.
WILLIAM WARD WATKINS, ARCHITECT



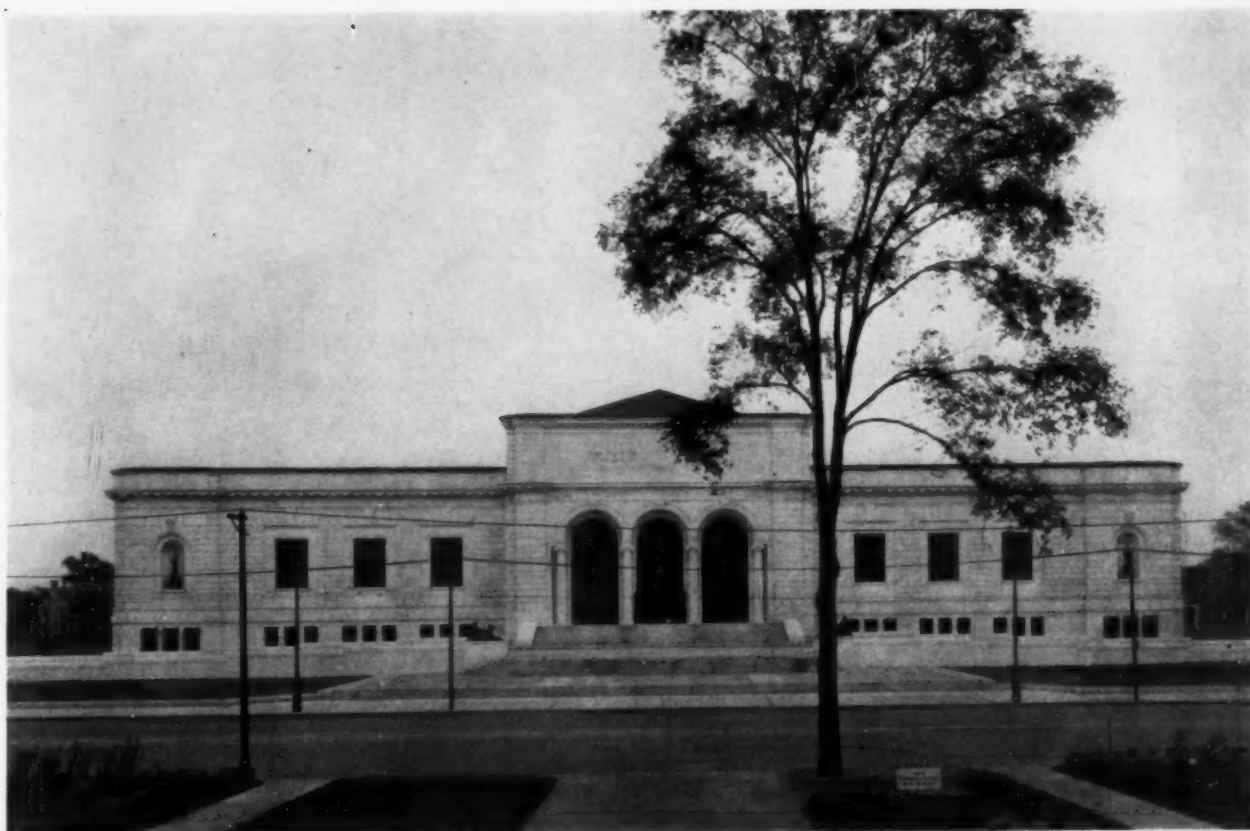
SECOND FLOOR



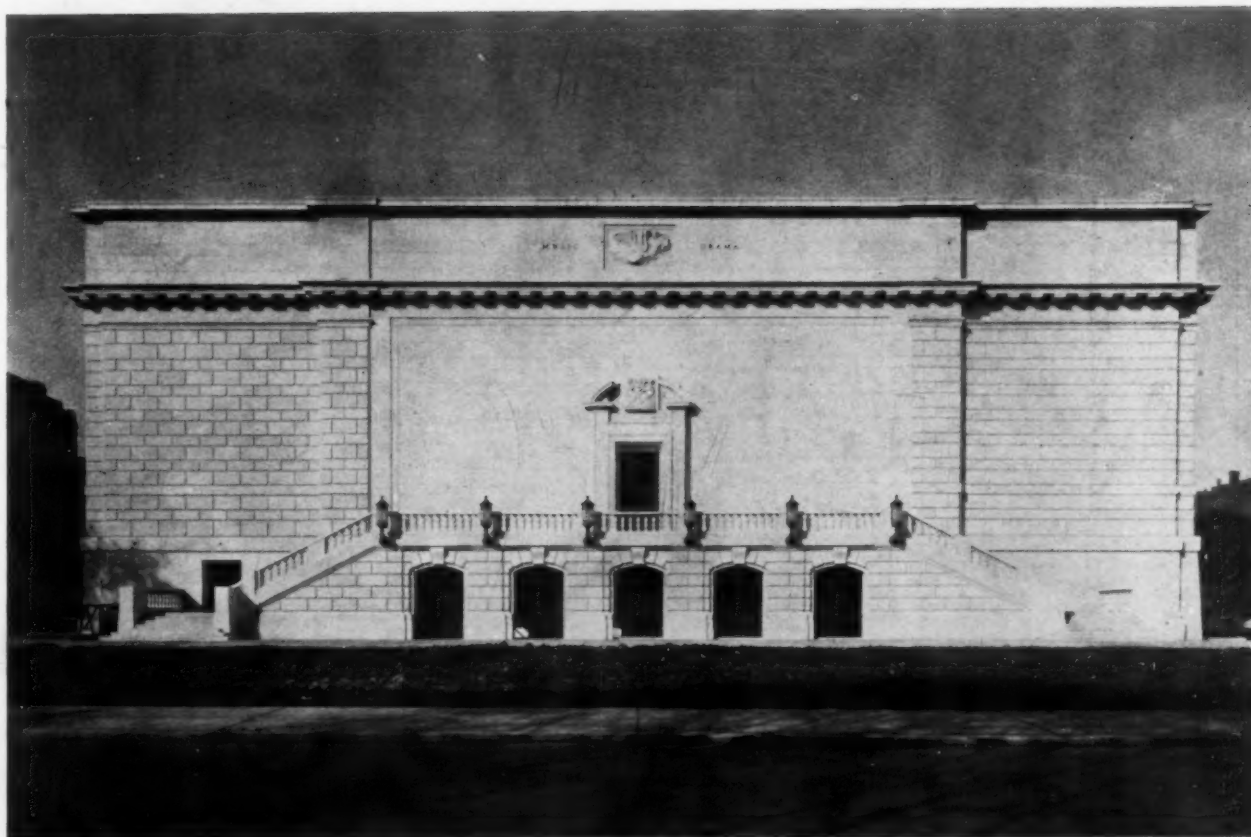
FIRST FLOOR

PLANS, MUSEUM OF FINE ARTS, HOUSTON, TEX.

WILLIAM WARD WATKINS, ARCHITECT



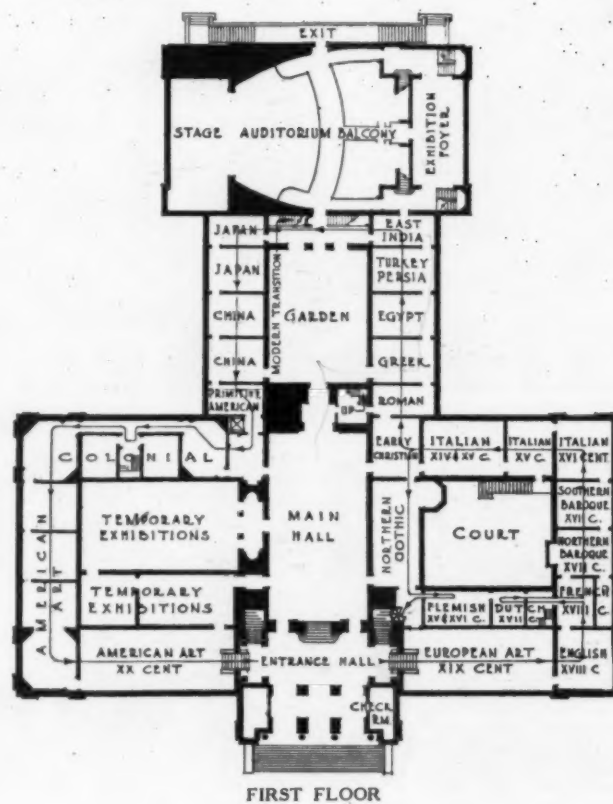
MAIN FACADE



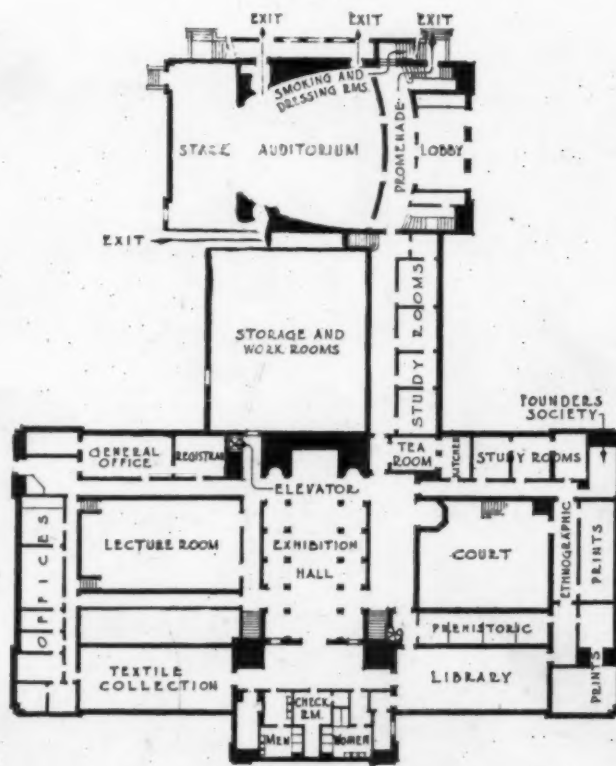
Plans on Back

AUDITORIUM ELEVATION
DETROIT INSTITUTE OF ARTS

PAUL PHILIPPE CRET AND ZANTZINGER, BORIE & MEDARY, ARCHITECTS



FIRST FLOOR



BASEMENT

PLANS, DETROIT INSTITUTE OF ARTS
PAUL PHILIPPE CRET AND ZANTZINGER, BORIE & MEDARY, ARCHITECTS



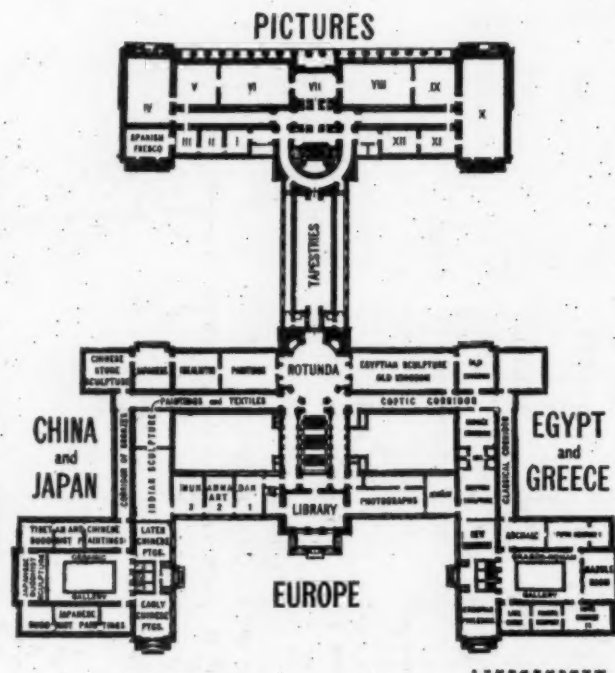
FENWAY FACADE



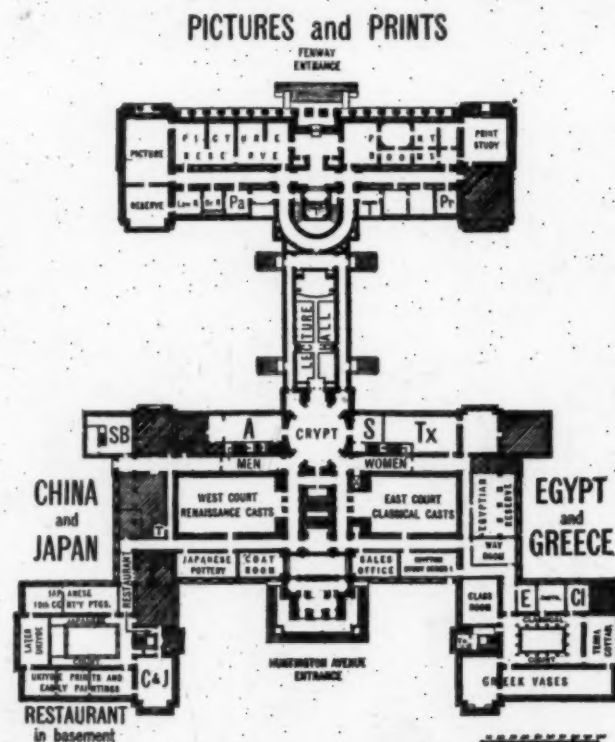
© Museum of Fine Arts, Boston

Plans on Back

ROTUNDA; DECORATIONS BY JOHN SINGER SARGENT
MUSEUM OF FINE ARTS, BOSTON
GUY LOWELL, ARCHITECT

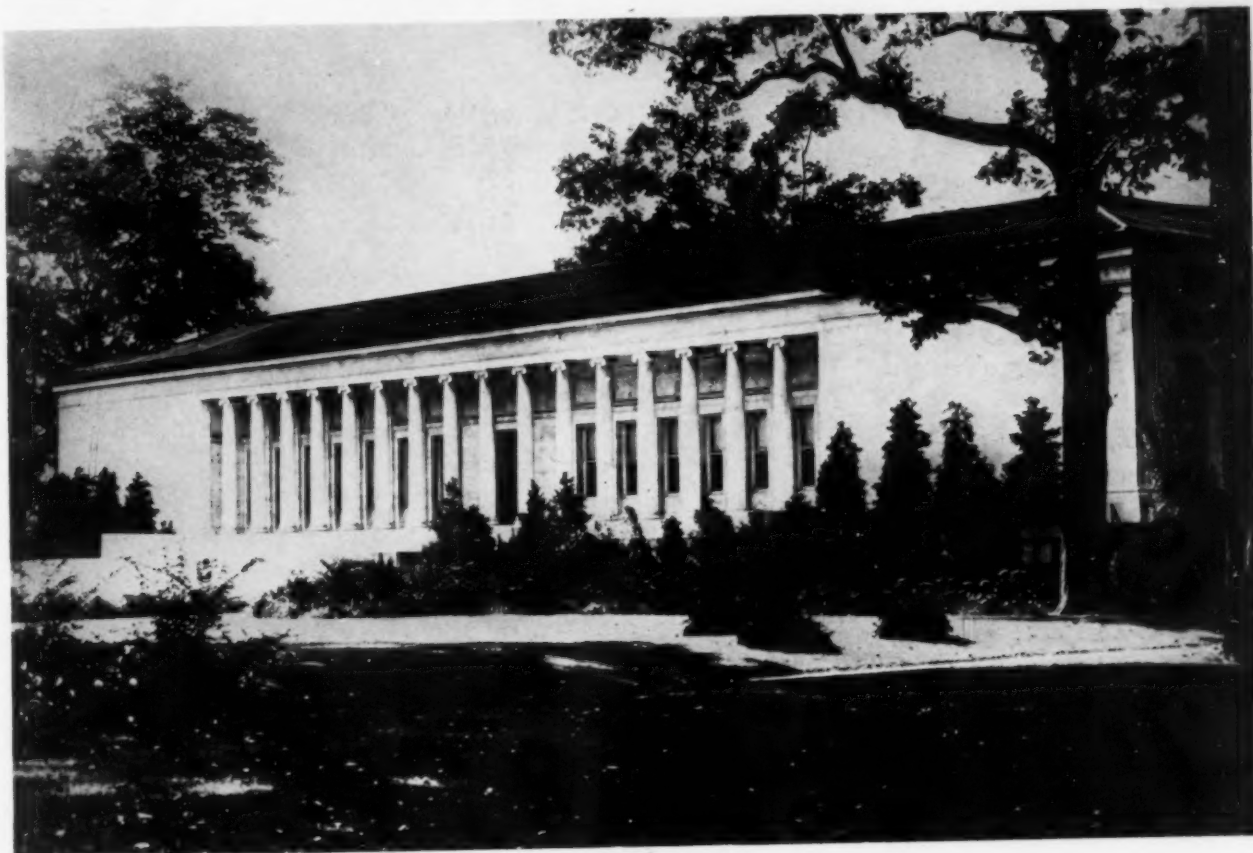


SECOND FLOOR



FIRST FLOOR

MUSEUM OF FINE ARTS, BOSTON
GUY LOWELL, ARCHITECT

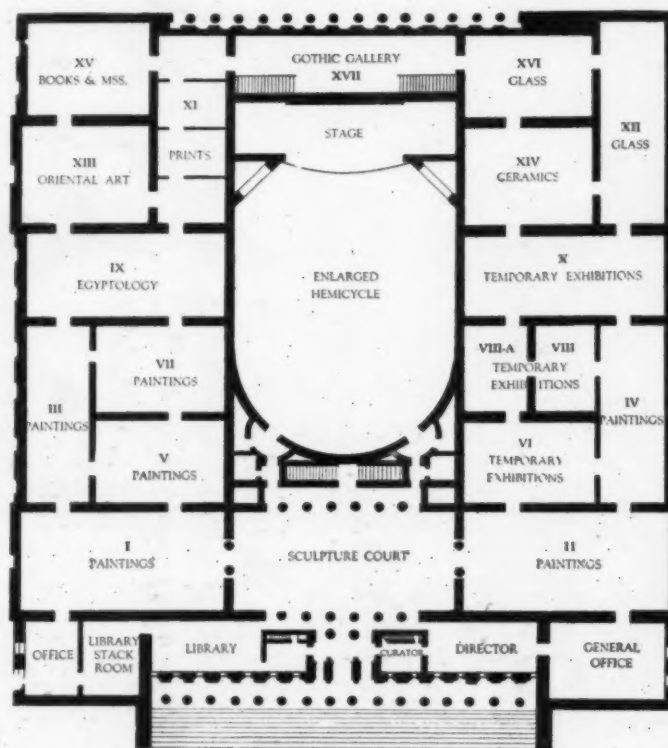


ENTRANCE FRONT



Plans on Back

SCULPTURE COURT
TOLEDO MUSEUM OF ART
EDWARD B. GREEN & SONS, ARCHITECTS



FIRST FLOOR



BASEMENT

PLANS, TOLEDO MUSEUM OF ART

EDWARD B. GREEN & SONS, ARCHITECTS

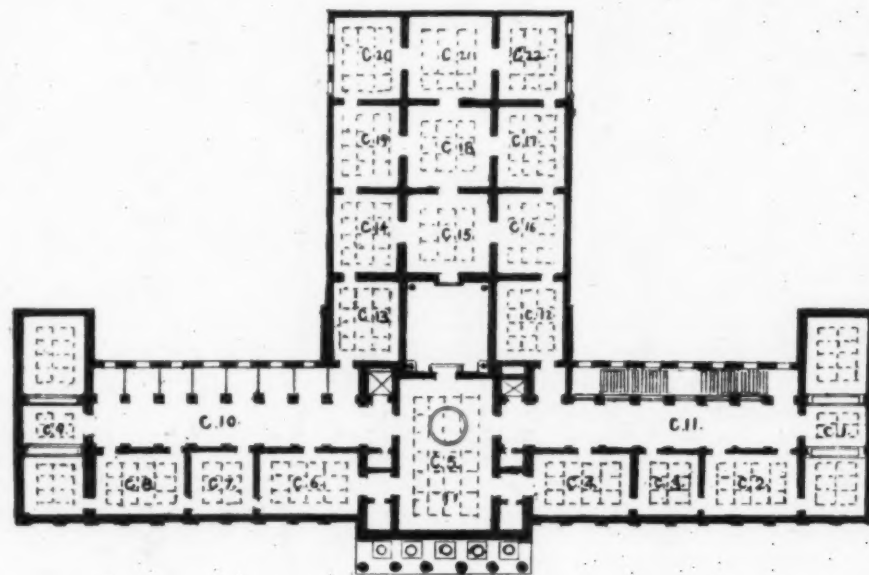


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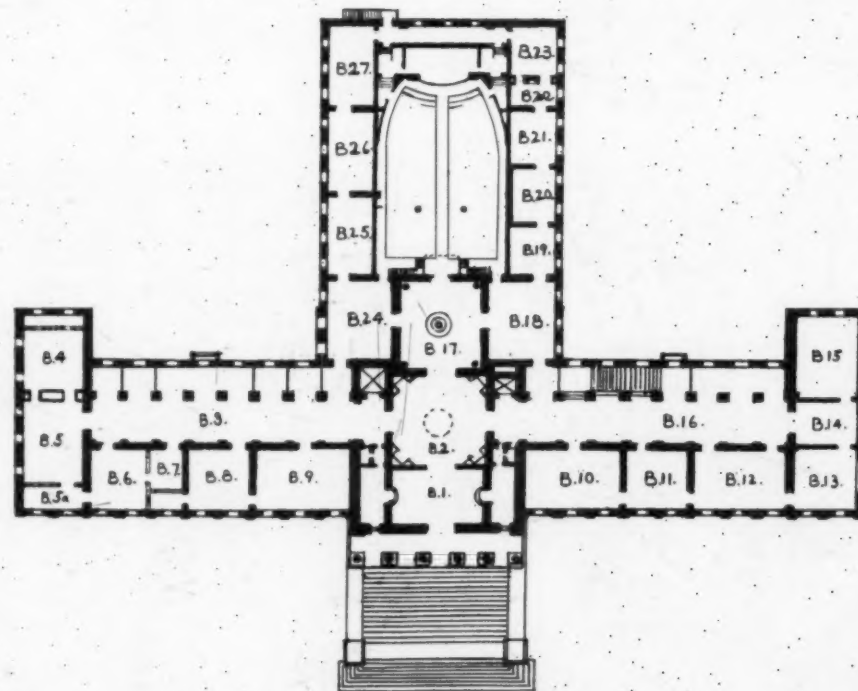


Plans on Back

A GALLERY
MINNEAPOLIS INSTITUTE OF ARTS
McKIM, MEAD & WHITE, ARCHITECTS



SECOND FLOOR



FIRST FLOOR

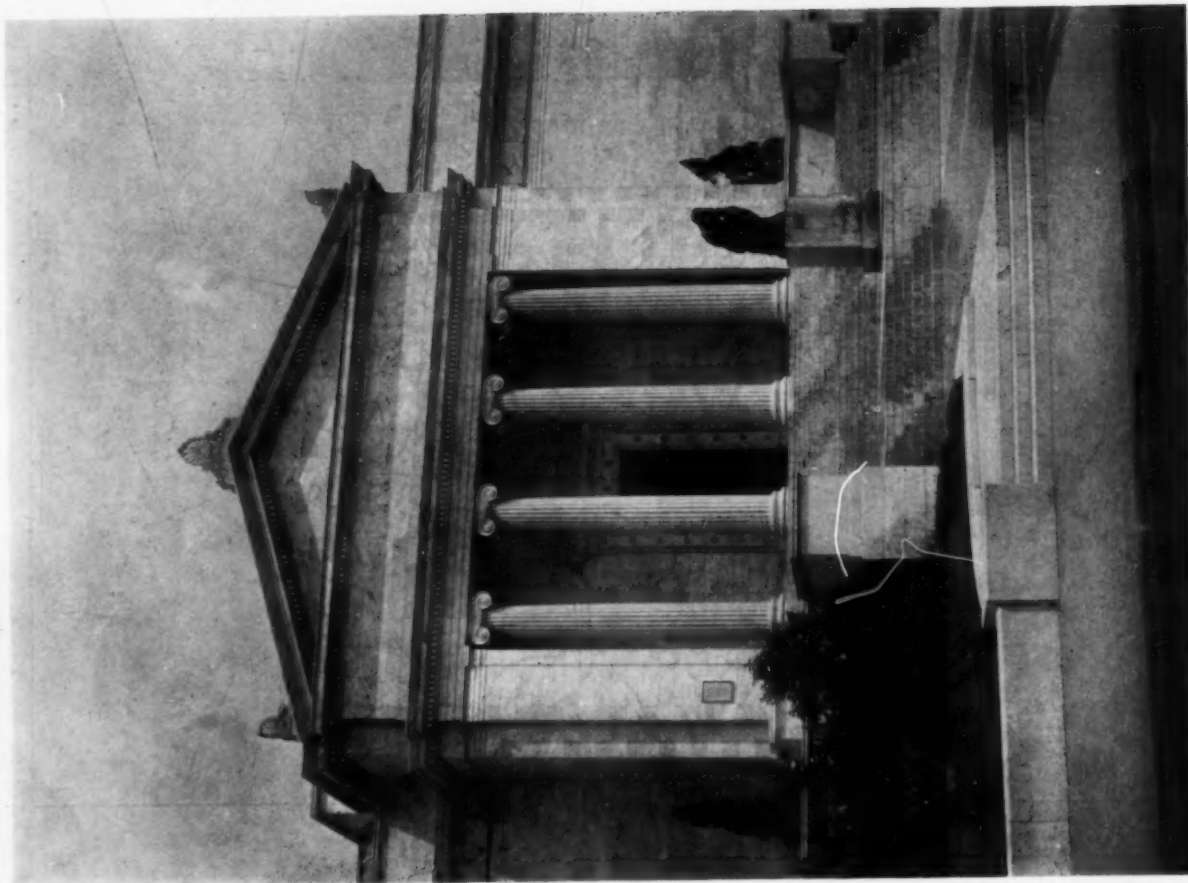
PLANS, MINNEAPOLIS INSTITUTE OF ARTS

McKIM, MEAD & WHITE, ARCHITECTS



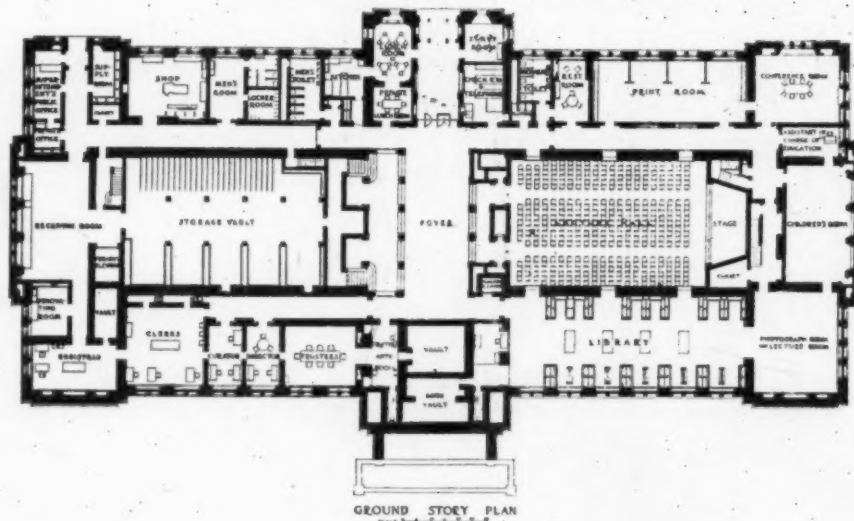
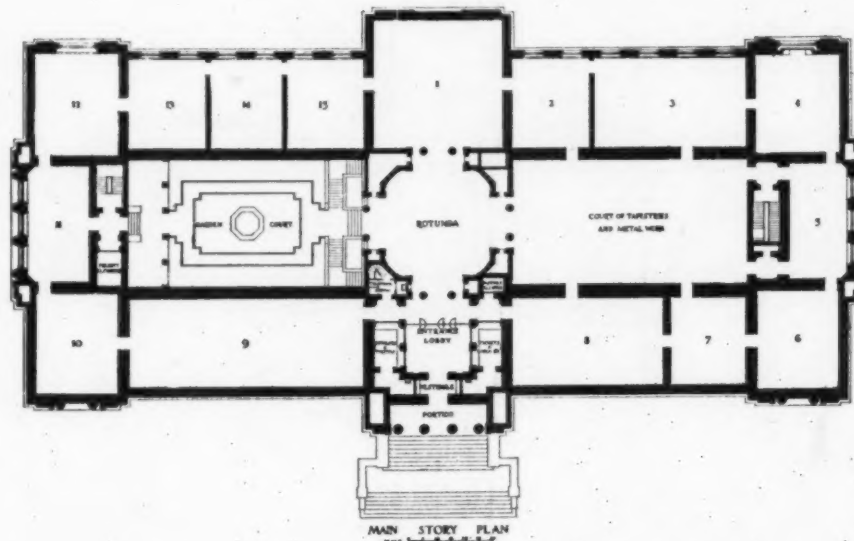
Plans on Back

DETAIL, WEST FRONT

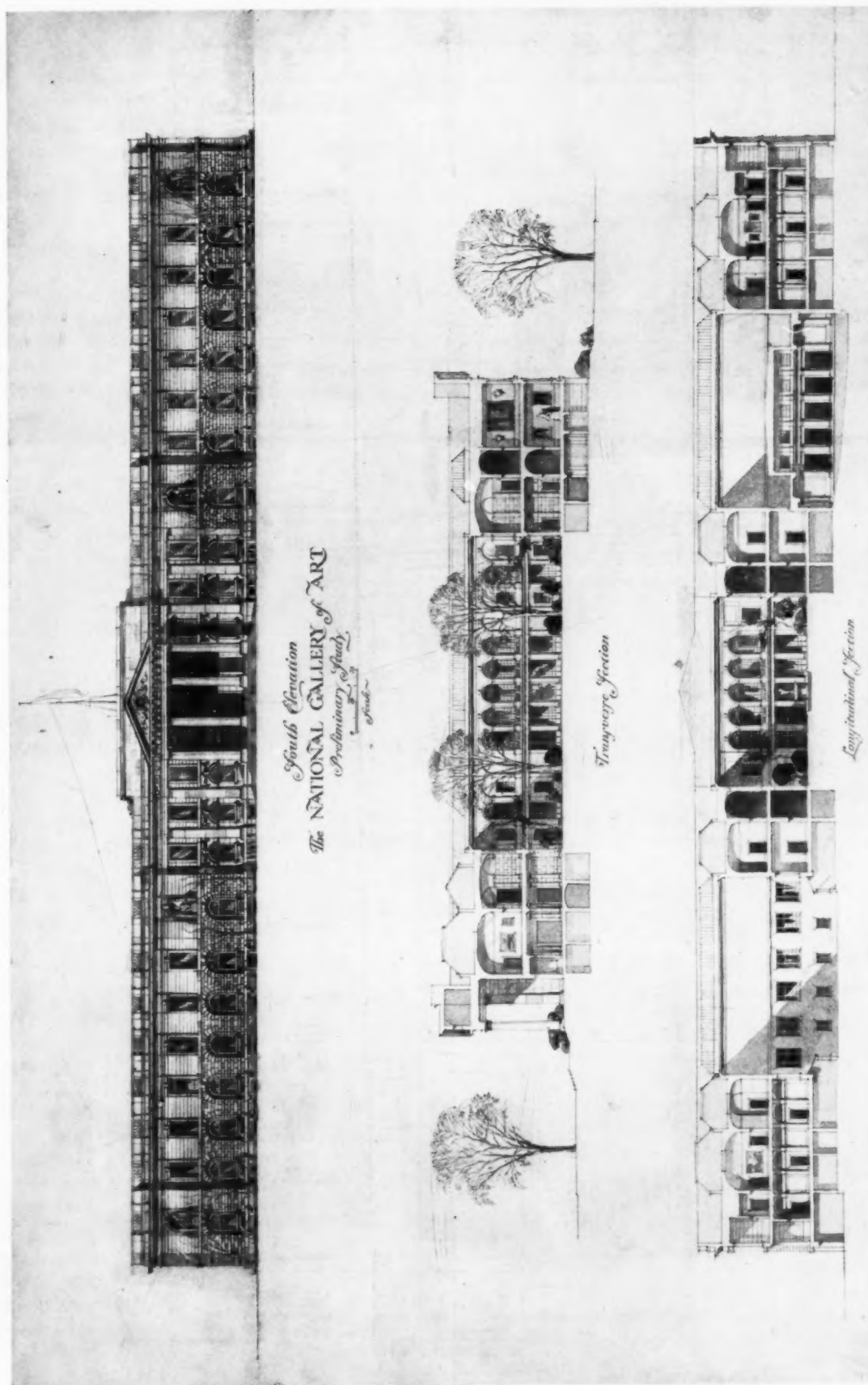


MAIN ENTRANCE

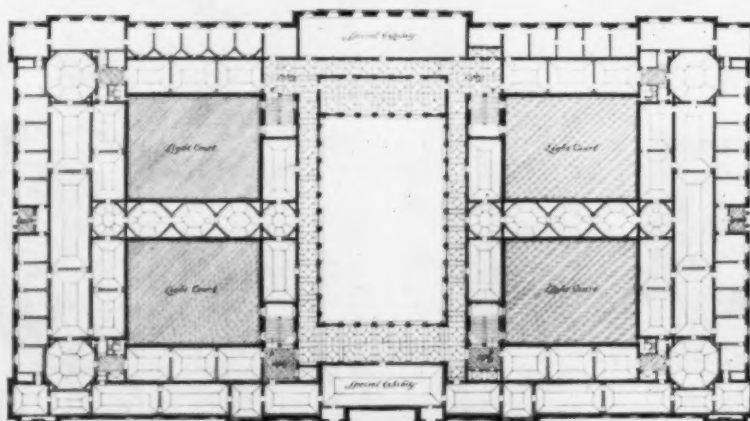
CLEVELAND MUSEUM OF ART
HUBBELL & BENES, ARCHITECTS



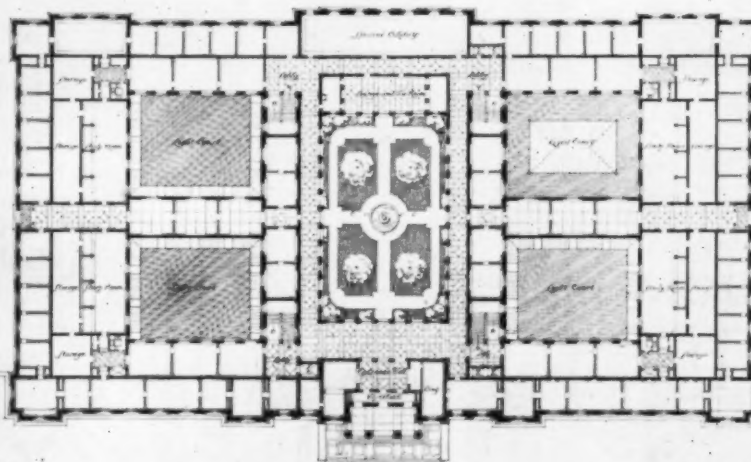
PLANS, CLEVELAND MUSEUM OF ART
HUBBELL & BENES, ARCHITECTS



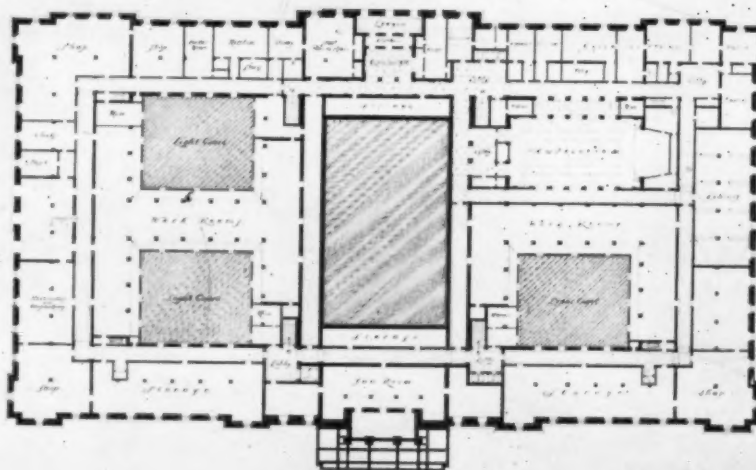
PRELIMINARY STUDY, NATIONAL GALLERY OF ART, WASHINGTON
CHARLES A. PLATT, ARCHITECT



GALLERY FLOOR PLAN
Scale: 1/8" = 1'-0"



ENTRANCE FLOOR PLAN
Scale: 1/8" = 1'-0"



SECOND FLOOR PLAN
Scale: 1/8" = 1'-0"

PLANS, NATIONAL GALLERY OF ART, WASHINGTON
 CHARLES A. PLATT, ARCHITECT

A Trend in Museum Design

By CHARLES G. LORING

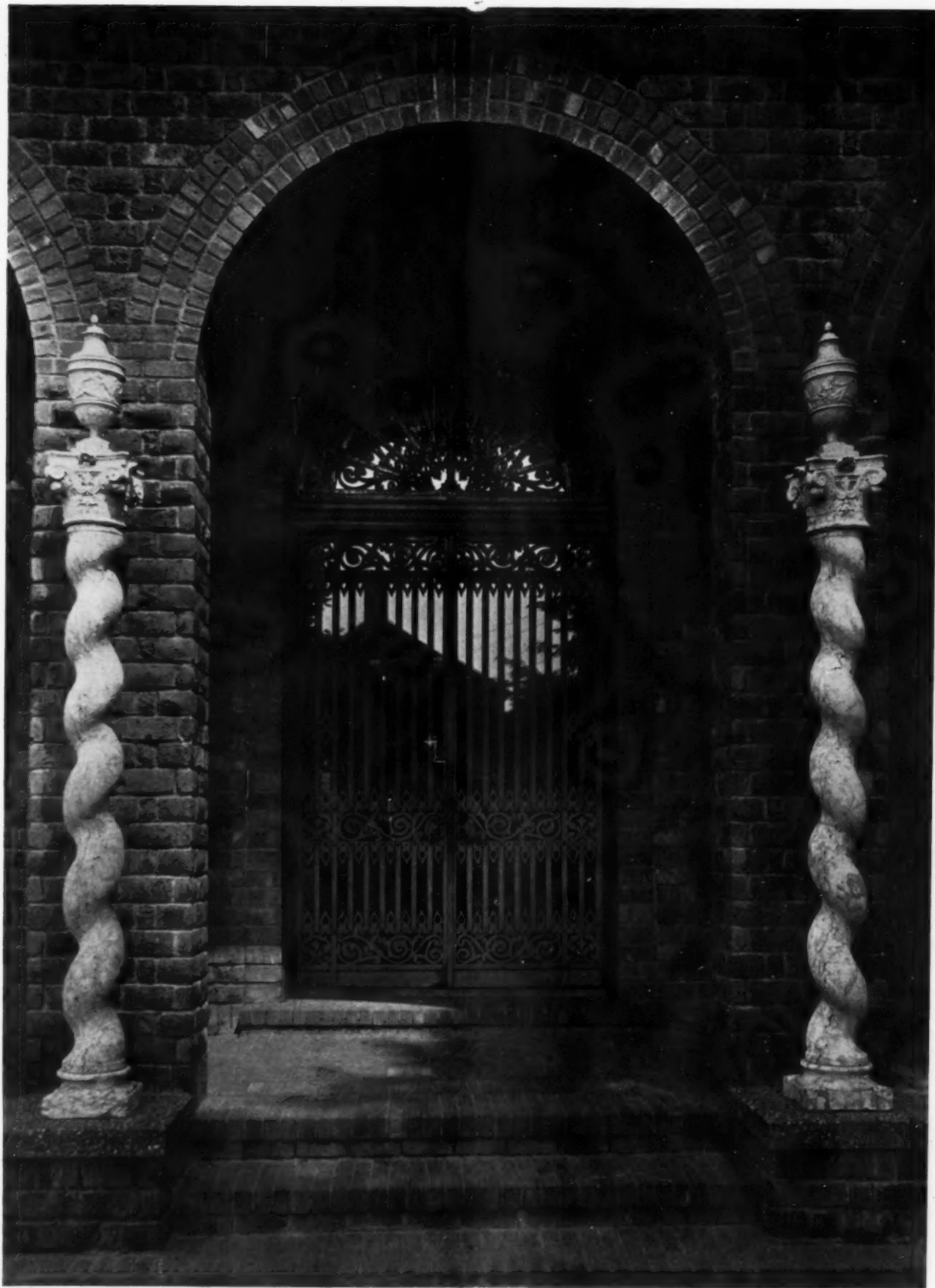
AMERICAN art museums have undergone a fundamental change during the last generation, a change in the very theory of their function, and yet one which has been scarcely noticed by the general public. From year to year newly presented features attract wide attention. An Egyptian tomb is opened, or the work of a French sculptor is imported, or Balkan embroideries are the rage, and kindred subjects in the permanent exhibitions attract careful inspection. The mass of the display seems about the same to out-of-town visitors, to the art students, and to *pater familias* with the children,—but the background is being constantly modified. In the minds of art museum authorities, the trustees, directors, curators and experts in general, the major theorem is what to exhibit. Raising funds is hard work, but how best to expend them is fascinating. Technical details of construction, fenestration, circulation and humidification must be skillfully adjusted and above all adjusted to the theory of what is to be exhibited. The personification of the museum must be visualized by the authorities before the architects are commissioned to embody it in the building itself, and it is the museum authorities who must determine for what section of the public the exhibitions are primarily intended; or if not for the public, as in private galleries, what external expression is to be given it. The gradual revolution which has occurred in the theory of what to exhibit is therefore fundamental and concerns very largely the emphasis on quality as against quantity.

Fifty years ago objects of art of the first order were scarce in the United States, and foreign travel was indulged in by only a very few. The museum public was satisfied with an elementary exhibition; almost any paintings, not necessarily masterpieces, sufficed; plaster casts, not original bronzes or marbles, were quite acceptable. Certainly a copy of a Rembrandt or a portrait of the "School of Rembrandt" was better than no painting at all, and to be able to compare the sculpture of Greece and that of the Renaissance, full sized and in the round even if in plaster, was better than to be limited to steel engravings and photographs. The galleries were for art, but the intellectual craving was better nourished than the aesthetic. Today, when the sources of material have been so expanded, and the importation of objects of art is an ever-mounting tide, more and more museums may select what they want. Today, when the connoisseur's interests are eclectic, he is as well satisfied with a Thibetan fresco as a Praxiteles relief, and an anonymous Italian primitive fragment provokes his enthusiasm, although it be meaningless to the "common people." With such parallel influences, the trend is to concentrate on a few superior objects and to banish the exhibitions appealing

primarily to student class work in the history of art or to the immigrant populations which crave reminders of their transatlantic homes. This trend is finding expression in the modern museum plan in a greater use of small rooms where the attention may be focused on two or three masterpieces, well lighted and set at the level of the eye against subdued backgrounds, rather than of long, wide galleries with skylights where the walls are crowded with a bewildering display. Oddly enough, this very evolution has caused a reversion to the type of the earliest continental public galleries. When states or cities first collected their art treasures for the enjoyment of their citizens, they did not erect new structures but made use of existing palaces, the residences of kings or nobles, with endless suites of intercommunicating rooms, as in the Louvre or the Pitti.

The emphasis laid by many museum directors and trustees on elimination rather than inclusion in the scope of their exhibits, in making their appeal to the cultured rather than to the uneducated, calls for the development of reserve galleries or rooms which are both for convenient storage and special study. Basement vaults with only artificial lighting are no longer acceptable. The trend toward quality rather than quantity is not as clearly mirrored in the facade as in the plan. This is because with the small number of museums erected, a new motivating theory cannot find general expression as quickly as in school or bank design, where many minds are studying and re-studying the same problem. The originators of a modification in museum technique, who are not architects, can express themselves directly only in the sizes and grouping of rooms and but indirectly in the artistic subtleties of exterior design. Certainly there has been a swing away from the monumental, but whether this is established or is due to conditions remains to be seen. This gives particular interest to certain new buildings.

If it is permitted to generalize from one example, not to prove a rule but to illustrate a tendency, the new Fogg Museum of Art at Cambridge may well be considered. The Georgian facade, devoid of columns and pilasters, with small-paned windows white-framed against the brick, has none of the neo-Classic, Greek, Roman, or Beaux Arts about it. It is in quite a new mode, and yet dignified and substantial. Certainly there is nothing spectacular, nothing to lure the average man in the street off the street or the average student away from the bleachers or his flivver! The exterior does not attempt to proclaim the treasures within; rather it suggests a very rich and exclusive metropolitan club house. It is almost a surprise to have the doorman welcome the casual visitor and not hold him in the vestibule while his card is being sent up to the house committee!



ENTRANCE DETAIL

PARRISH ART MUSEUM, SOUTHAMPTON, N. Y.
GROSVENOR ATTERBURY, ARCHITECT

Museums of Art

By HENRY W. KENT

WHAT kind of building is suitable for a museum of art? is a question more often heard nowadays as the museum "idea" spreads in the country, and as small and large towns begin to bestir themselves in the creation of such institutions. Formerly when a museum building was considered, there were but two thoughts in the minds of the donors, trustees, or committees responsible for it, and of the architect entrusted with the task,—namely, to provide space for the display of the objects of art in hand, if there were any, and to give room for a reasonable growth in the number of similar objects. Galleries for paintings and a "sculpture court" were usually the result, with an office or two thrown in for the "director," and the basement assigned to storage. It goes without saying that the exterior of the building was planned to be a credit to the town, of marble if funds permitted, in the classical manner with columns in front, and while it was usually considered that the site should be accessible, that need does not appear to have outweighed considerations in favor of a park or an outlying district, particularly if it cost nothing!

The Traditional Museum. There were plenty of traditions concerning all of these matters for the guidance of those who had the destinies of such institutions in their hands, and in fairness to these gentlemen it may not be amiss to consider briefly what they were. First, as to the objects to be collected by and housed in a museum of art. Until comparatively recently such museums were con-

cerned only with the "fine arts," and that meant painting and sculpture. The adjective, to be sure, was not added until the nineteenth century, but since all of the great museums of Europe contained such things, and particularly since the historians of art persistently applied themselves to these subjects to the neglect of the others, there seemed to be reason for believing that they should be "collected" to the exclusion of the other arts. The tradition, however, allowed the inclusion of the archaeological remains of Egypt and Greece; the Vatican, the Louvre, and the British Museum all included them, mummies and all, along with the "fine" arts,—so why should not we? What the Vatican and the Louvre had done set the pace for our ambitions and created our traditions in museum collecting. By the same token, these museums gave us our ideas as to correctness in architectural matters,—halls, galleries, rotundas, monumental flights of steps, lofty walls,—everything dignified and stately and, of course, all sky-lighted.

Broadening the Museum's Scope. Thus we gained our traditions, and where could we go for better? Where, indeed, unless we were to put our minds upon it and work out for ourselves the solution of our own problems? For this there would be needed a little study of the histories of the Vatican and the Louvre, of why and how these places came to be used as the public repositories for collections of works of art, and why their galleries, rotundas, etc., were what they are, and why sky-lighted; a little consideration of the story of collecting and collectors,



Photo. Samuel H. Gottscho

Parrish Art Museum, Southampton, N. Y.
Grosvenor Atterbury, Architect

and of the difference in conditions that existed in Rome and Paris in the seventeenth and eighteenth centuries as compared with those existing in ours; and a little reasoning as to the differences in public obligations involved in such possessions here and abroad. It is the conclusions which resulted from the study of these things which, after years of following traditions, have been responsible for our present idea as to what museums are for, what they ought to do, and what their buildings should be like,—ideas which have been thought out in the last 20 years, while the old traditions mostly have gone by the board. We have outgrown them. This principle was responsible for the cutting out of that early Victorian snobbery, the word "fine," to designate certain art, and the inclusion among the arts of the "lesser" or "smaller," which were formerly debarred. These are the arts which have an intimate relation to the things of daily life, and to the industries; which claim a vital interest from those who make, those who buy, and those who sell. With the collecting and display of examples of these arts there came a change in the kind of service the museum rendered to its public; people were now sought out and gathered in, instead of being passively observed when they turned up to gaze,—a service of personal relationship for giving assistance in the gaining of pleasure and profit,—the museum was humanized.

The New Attitude. But how did all this affect the architecture? will be asked. Simply enough.

The dignified and stately Louvre-Vatican *salon* and *sala* gave way to rooms adapted to the display of other things besides Renaissance paintings and Greek sculpture, to rooms so strictly adapted to needs that their specifications could be written only from a knowledge of them. The new attitude toward the public called attention, also, to the need for consideration of the people who frequent the museum, and from points of view other than as a queue coming in at one door, staring at things, and going out by another door. Their comfort, their convenience, their study, their work, were to be provided for, in rooms adapted to these needs,—this in the new order.

All of these matters bring us to a definition; an art museum is a place where objects of art are collected for the purpose of their display to the best advantage, in order that people may get from them, with or without help, such enjoyment as the things can give and such practical help in solving their own problems as they may desire. The whole scheme of the modern museum and of its building is governed by this, and, briefly, in this way. Its functions are threefold: acquisition, exhibition, and exposition; and to carry them on adequate space is required for these functions; executive, administrative (and here should be included housekeeping), curatorial (here should be included the matter of exhibitions), educational, and public relations, all vitally necessary.

The Executive Needs. These requirements are obvious:—rooms for the boards of trustees and, in



Photo. Tebbs & Knell, Inc.

Gallery, Eastman Memorial Foundation, Laurel, Miss.

Rathbone DeBuys, Architect

larger museums, for committees, for secretaries, and the treasurer, all preferably kept together. The administrative and curatorial needs include offices for heads of departments, secretaries, and clerks, which may be together in one group, or spread about in relation to the departmental exhibits. There should be a receiving office, a room for packing and unpacking, a registrar's office, and a superintendent's office; quarters for engineers and electricians, and shops for various groups of workmen, such as carpenters, painters, roofers, upholsterers, plaster workers, etc., with stock rooms and rooms for the storage of materials. Large museums require, also, quarters for printers and photographers. For the housekeeping service, there must be rooms for all of the shop men, and for the attendants or guards,—dressing rooms, rest rooms, lunch rooms, baths, toilets, etc. There must be space for operations such as cleaning and polishing (some museums have laundries), and there must be a telephone central office, and a post office wherever the needs of a museum warrant it.

Storage Requirements. Not the least important rooms devoted to the objects of art are those for their storage. Until quite recently, as has been said, these were usually in the basement, in dark corners. Here we have a curious contradiction on the part of museums in that while the greatest pains are taken when exhibiting objects for the public to gaze at, in dust-proof cases and with careful regulation of temperature of rooms, etc., these same objects off

exhibition, in most museums, are given storage without provision for any of these protective influences. It is obvious that such things should receive the same care in storage as when on exhibition. For this purpose, well lighted rooms should be provided, and every attention should be given to temperature. Such rooms should be easily accessible, not only to the janitor but to the interested public. Some museums have awakened to this necessity, and progress is the order of the day. Storage rooms may be scattered, so as to fall into close relation with the departments to which they belong, or all housed in one building. Common sense dictates the latter, but curators often prefer the former arrangement, and architects' plans usually compel it. On the whole it is preferable.

Exhibition Rooms. There still remain to be considered the rooms for exhibition, with all the details of size, light, temperature, proportions, trim, etc. During the past 20 years, especially in Germany, such rooms have received close attention, but the conclusions arrived at do not allow final pronouncements, since the whole question of collections and methods of showing them in these rooms is still in a debatable stage. The reason for this is easily found. The art or science, whichever it be called, of exhibition, and the principles governing such presentations, have never received the attention that eventually must be given to them. As yet they have not all been discussed even by museum people, our only thoughtful contribution, for instance, on the



Gallery, Art Association of Indianapolis
Vonnegut, Bohn & Mueller, Architects

psychology of the thing coming recently from Lee Simonson in an illuminating essay. His presentation of the matter, from the point of view of the man who studies his audience, leads at once to the eye-opening conclusion that there is a point of view on this subject in addition to that of the educator or aesthete or antiquarian,—namely, the showman's. Crowd psychology, and the psychology of the individual beholder of objects of art, may well be studied as something quite as important as the equipment of the curatorial arranger of the objects exhibited.

Provisions for Studying Exhibits. It is clear from all of this that no museum can safely build its galleries without knowing exactly what it expects to show in them, and how. There can be no general architectural rules for the proportioning of them. Some objects demand large, some small, rooms; some demand high ceilings, some low; some demand one kind of light, others another sort,—and so on. Even galleries for paintings, which the architect used to claim for his own, now, because the curator has found out the value of classification by schools and groupings, are subject to experimentation in the interest of effectiveness in all sorts of ways. Appropriateness is discovered to be a virtue. A well known museum still exhibits snuff boxes in a room with a 50-foot ceiling! As we have pointed out already, the chief development in museum policy has been in the recognition of the obligation to render active public service, and this has affected its building as widely as its economy. Today, under this head, a museum requires a library, with rooms for the consultation and storage of photographs and lantern slides; a lecture room of good size with all the modern equipment of such a room; and smaller lecture rooms, or classrooms, for adults and children; study rooms, where objects may be seen and examined at close range; and for the comfort and convenience of its visitors, cloak rooms, rest room, smoking room, lunch room, a room for the giving of information, and a salesroom for publications. These rooms should be ample in size, conveniently placed, and pleasantly arranged, not tucked away in cellars and dark places. The people who pay the taxes deserve consideration. There are certain other matters, however, which should be emphasized here. Whatever be the arrangement of the parts of a museum building used by the public, the relation of room to room, and of section to section, is important; and whatever be their systems of ventilation and lighting, trim, finish, or decoration, the circulation of the visitors through these rooms, the economical method of policing them, and the comfort and convenience of visitors and employees alike in traversing them are all to be considered as major problems to be solved.

Meeting Modern Requirements. A few more words of warning and of suggestion to architects may not be amiss. The public wants the entrances to its buildings on the street. It will not mount monumental stairs if it can find an elevator. The theaters found this out long ago,—the cheapest seats

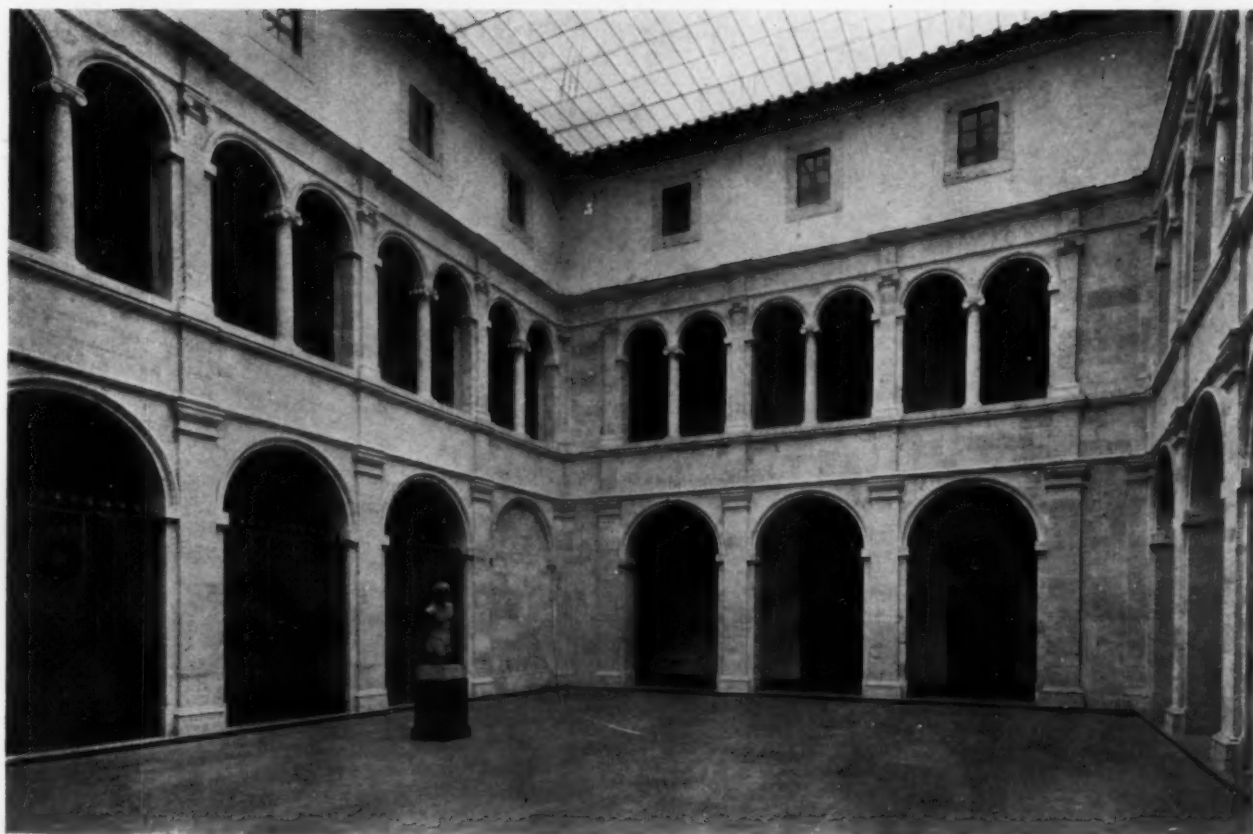
are upstairs. The rotunda,—so effective in Roman baths,—is useless in a museum, and large courts with the architect's embellishments, if they are provided for exhibition use, are a delusion and a snare, to be ripped off if possible when his back is turned. In a museum building the pressing problem for the architect to solve is the arrangement of the different kinds of rooms devoted to the different functions,—executive, administrative (not to forget housekeeping), and public service,—so that they shall be perfectly related and perfectly adapted to their work; and most important of all is the provision in the plans for the extension of all of these, appropriately, economically, and effectively, when the time to enlarge the building shall come. The building of the Cleveland Museum marked a turning point in this form of architecture. There the three-fold functions of the museum were recognized for the first time, and provision made for them, with the result that this museum has come to furnish principles in buildings of this kind. It would be a pity, however, if the success of that first embodiment of the idea should lead, as there are signs that it has, to the use of a stereotyped system. The Cleveland Museum, located in a large park for good and sufficient reasons, included in its plan a garden court, but it does not follow that all museums, especially if they have sufficient space around them, should have such courts. A court in a museum located in the heart of a crowded city is a good thing if it can be afforded. There should be no such thing as a stereotyped museum of art. Each presents its own problems, and should deal with them accordingly. A stereotyped museum structure means a cheap building.

Summary. The museum has made a new definition for itself, based upon a new understanding of its obligations to the community. It has assumed an active, even an aggressive, part in the public life. It has ceased to be a passive agent in artistic development with but two functions,—the acquisition of works of art and the display of them. It has taken to advertising its wares and services, as one who seeks to make a profit on an investment. These facts have changed its ideas of its architecture, and the problems of the building, once simple, have become complicated. These problems which, when simple, were thought to be easily solved by the architect who knew his Louvre and Vatican, now need wisdom and forethought in providing for the business of the other functions which can be given only by the man having experience in them. The plan must emanate from the museum man with the architect to help him. The Louvre-Vatican idea of museum functions is as dead as the dodo, and it follows as a matter of course that the Louvre-Vatican style of building is no longer adapted to the new ideas. The sooner it and the dignified and stately disasters resulting from too great devotion to the sacred principle of the fenestration of the facade are given over, the sooner we shall arrive at an appropriate style of museum architecture, a style beautiful and practical.

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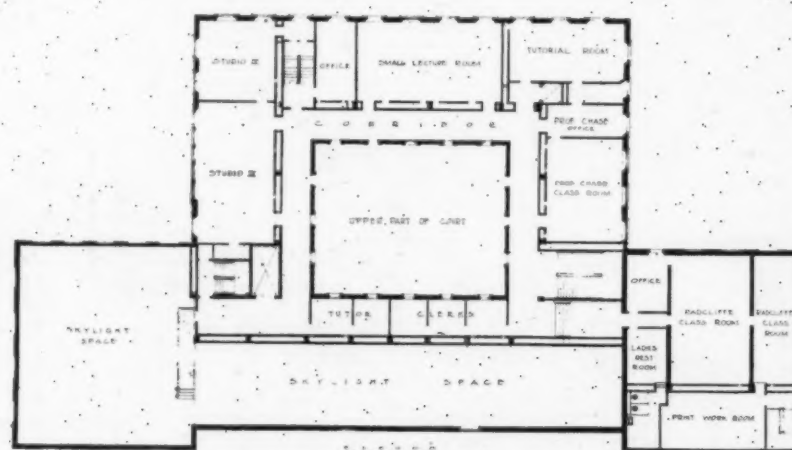
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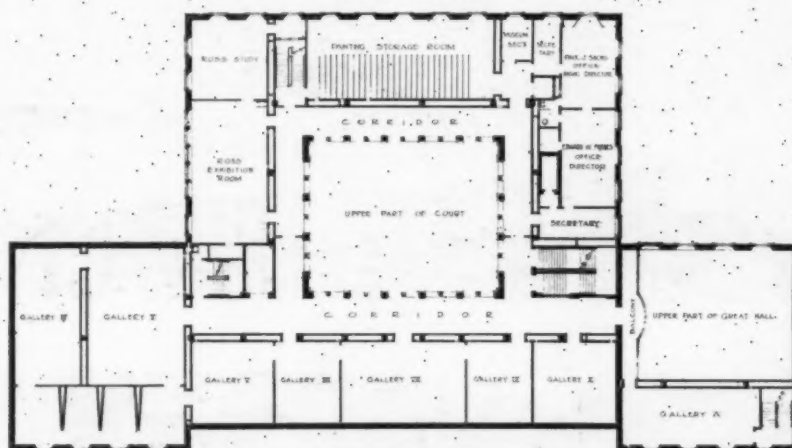
ENCLOSED COURT

Plans on Back

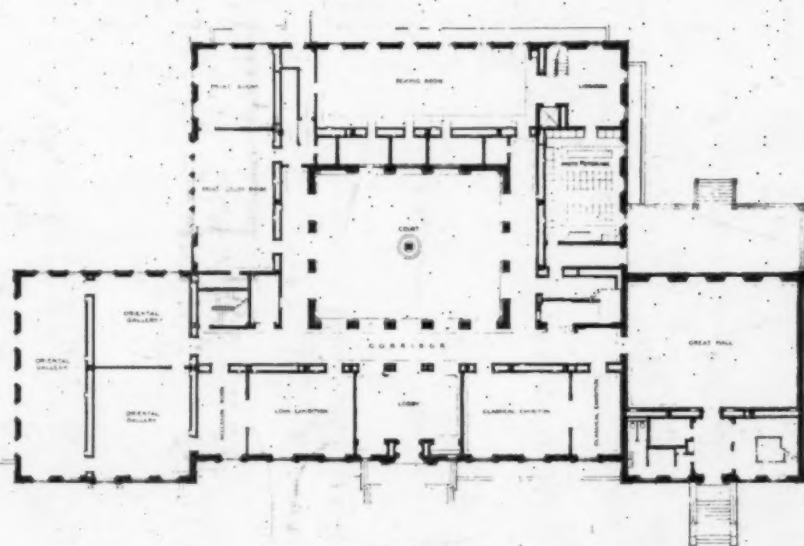
• NEW FOGG MUSEUM, CAMBRIDGE, MASS.
COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, ARCHITECTS



THIRD FLOOR

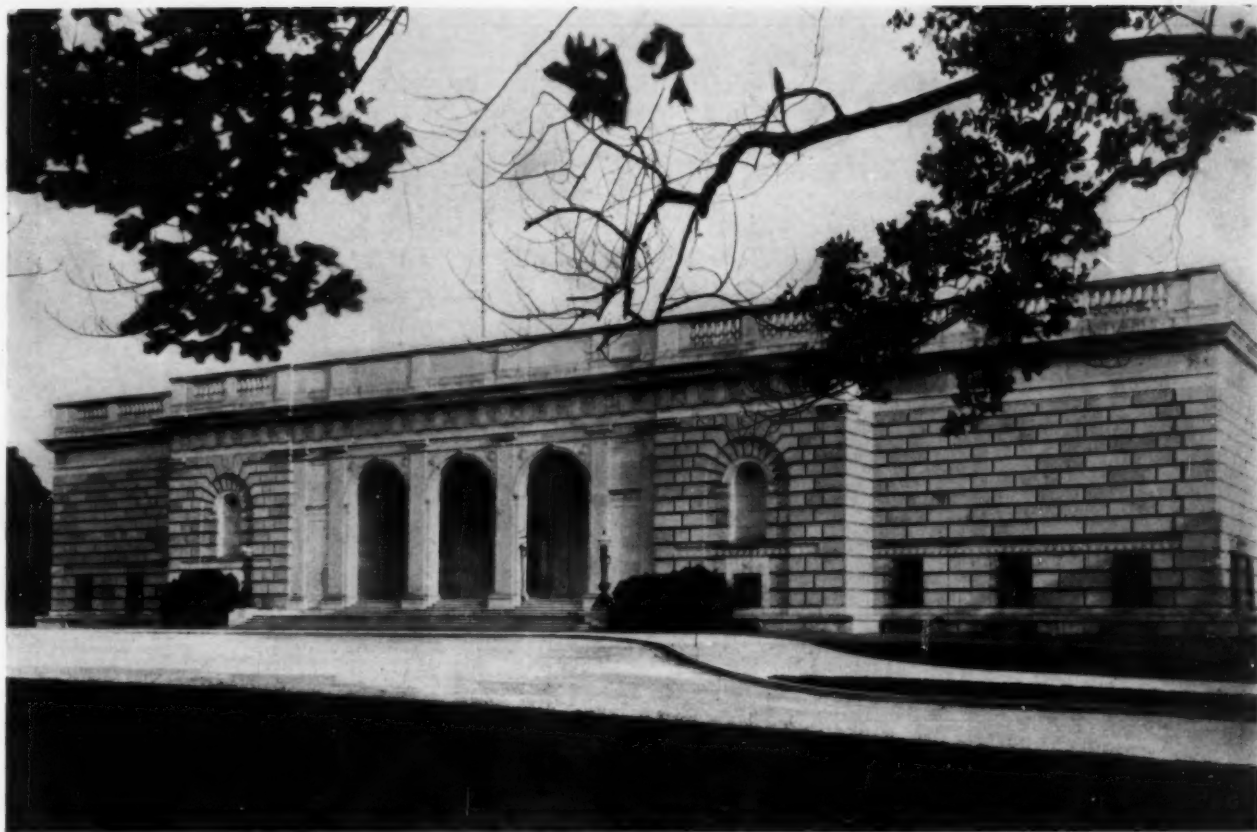


SECOND FLOOR

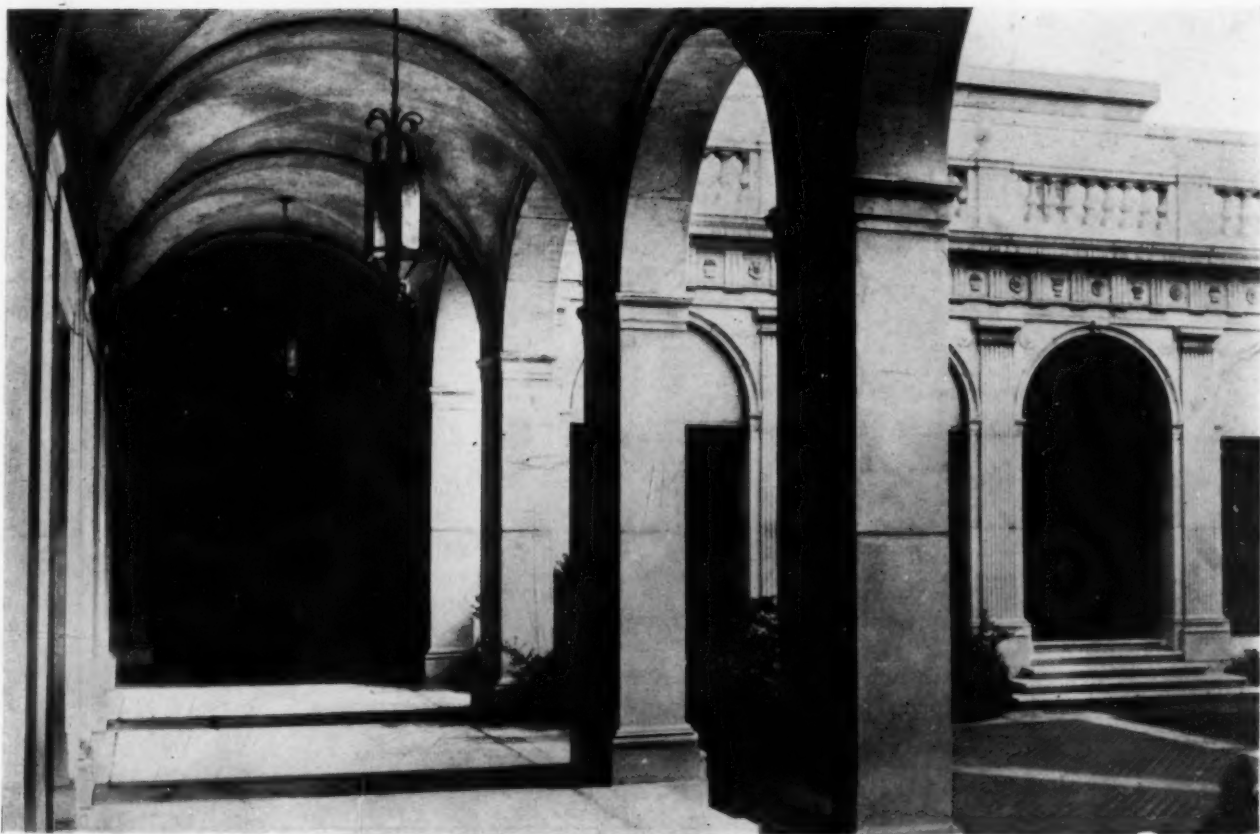


FIRST FLOOR

PLANS, NEW FOGG MUSEUM, CAMBRIDGE, MASS.
COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, ARCHITECTS



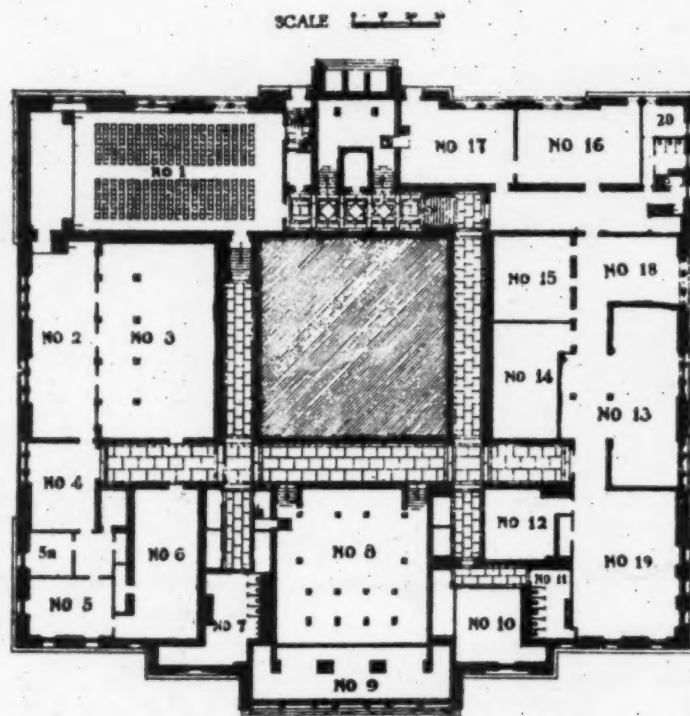
MAIN ELEVATION



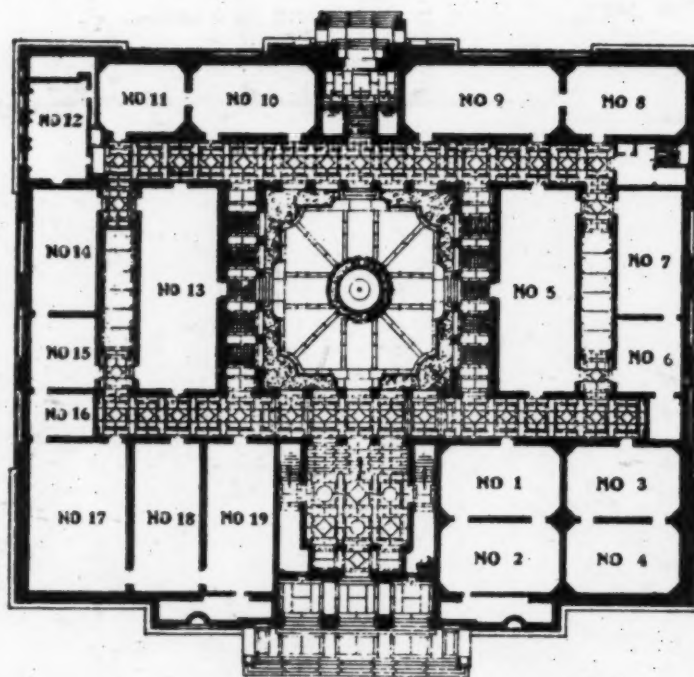
Photos, Richard Southall Grant

Plans on Back

COURT LOGGIA
FREER GALLERY OF ART, WASHINGTON
CHARLES A. PLATT, ARCHITECT



SECOND FLOOR



FIRST FLOOR

PLANS, FREER GALLERY OF ART, WASHINGTON

CHARLES A. PLATT, ARCHITECT

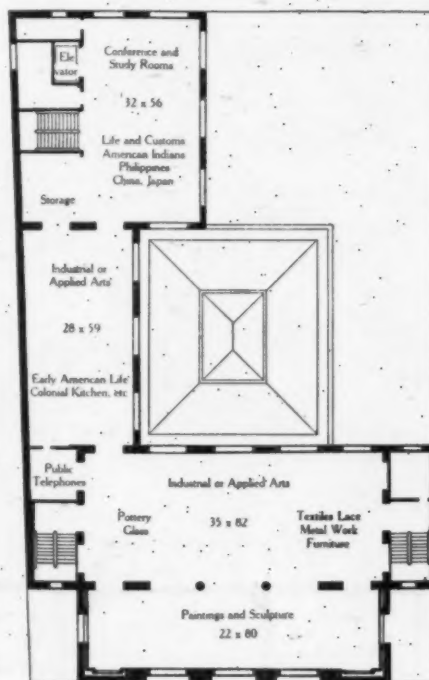


MAIN FACADE

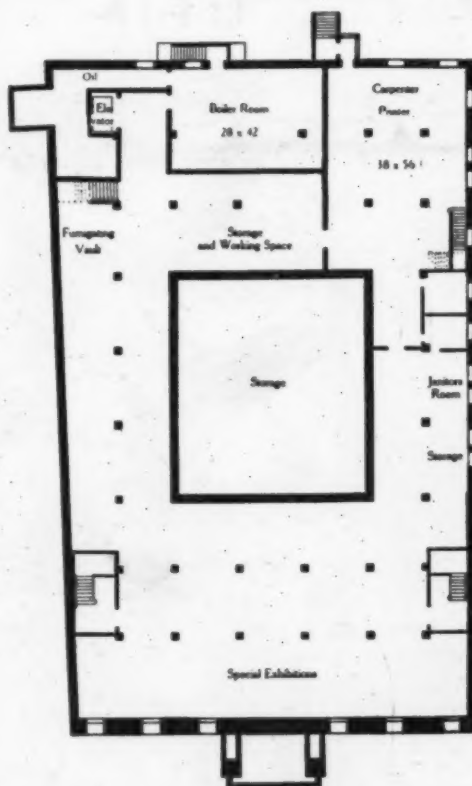


Plans on Back

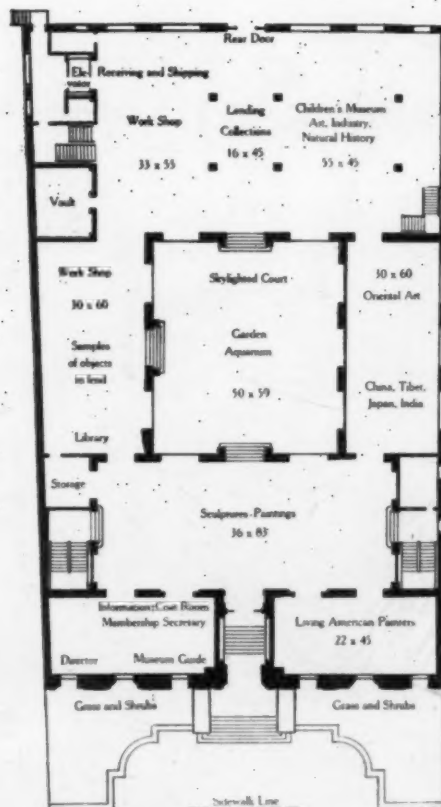
CENTRAL COURT
NEWARK MUSEUM
JARVIS HUNT, ARCHITECT



SECOND FLOOR



BASEMENT



FIRST FLOOR

PLANS, NEWARK MUSEUM
JARVIS HUNT, ARCHITECT

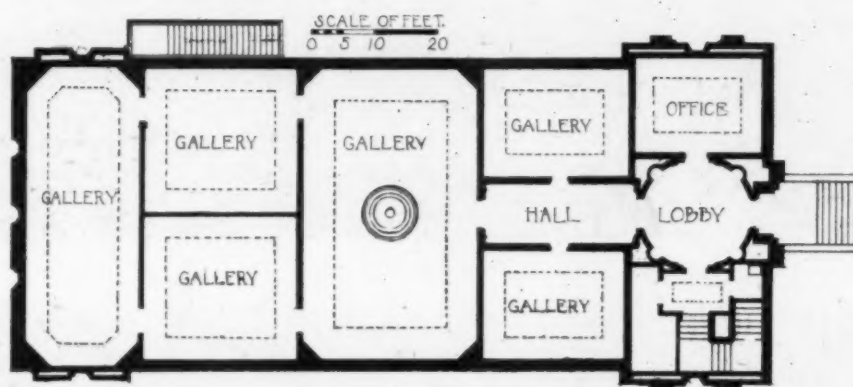


ENTRANCE FRONT



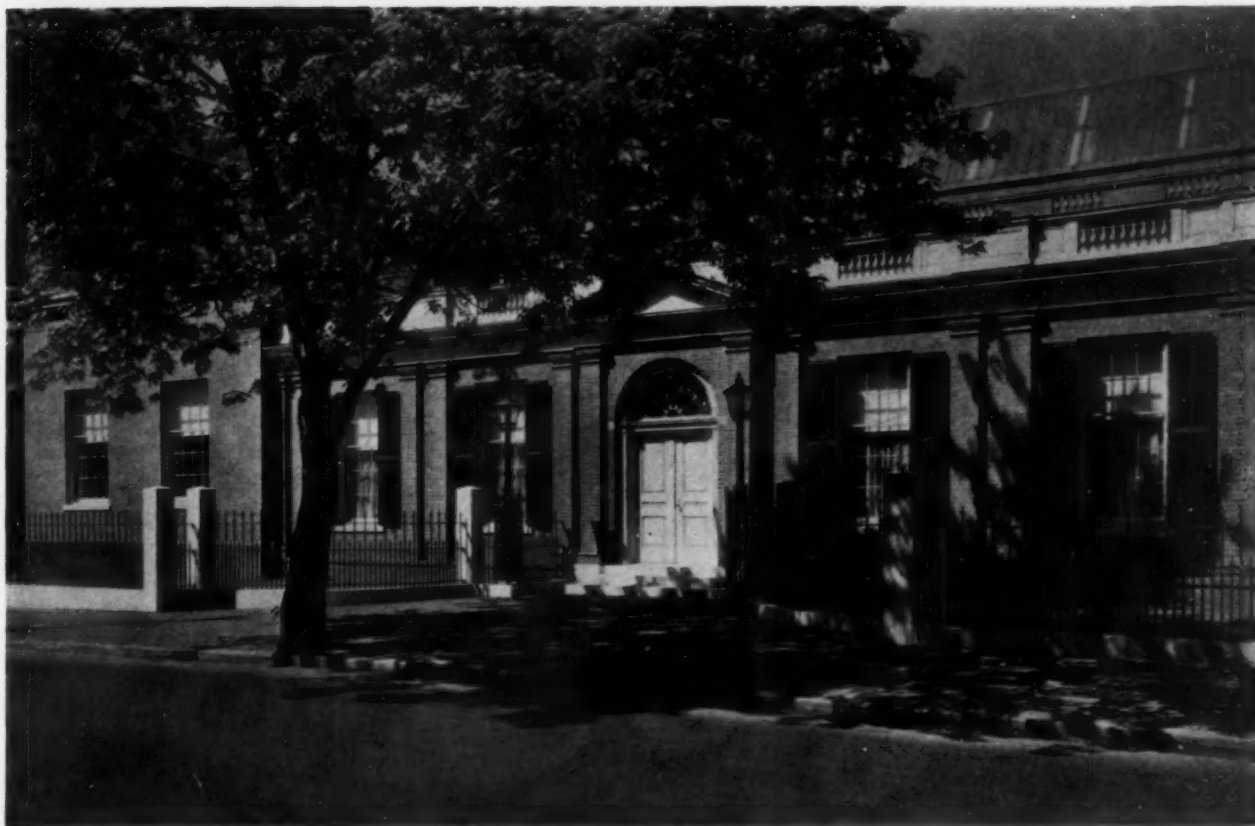
Plan on Back

NORTH GALLERY
HORACE C. HENRY ART GALLERY, SEATTLE
BEBB & GOULD, ARCHITECTS



PLAN, HORACE C. HENRY ART GALLERY, SEATTLE

BEBB & GOULD, ARCHITECTS



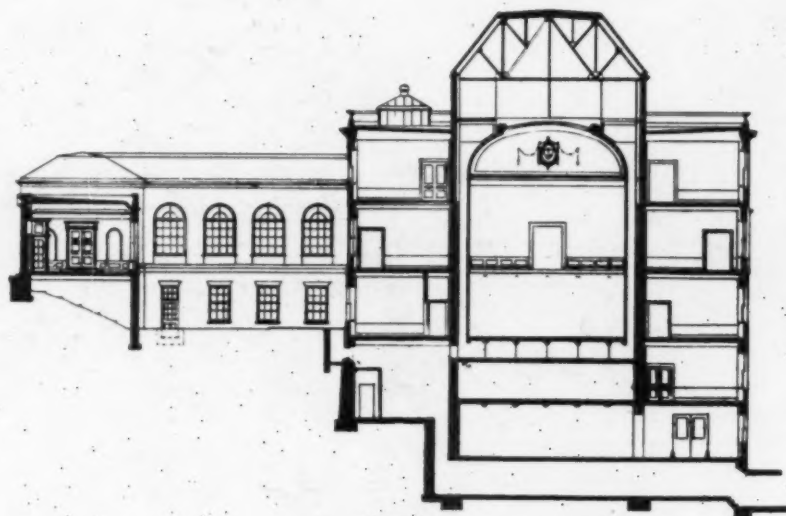
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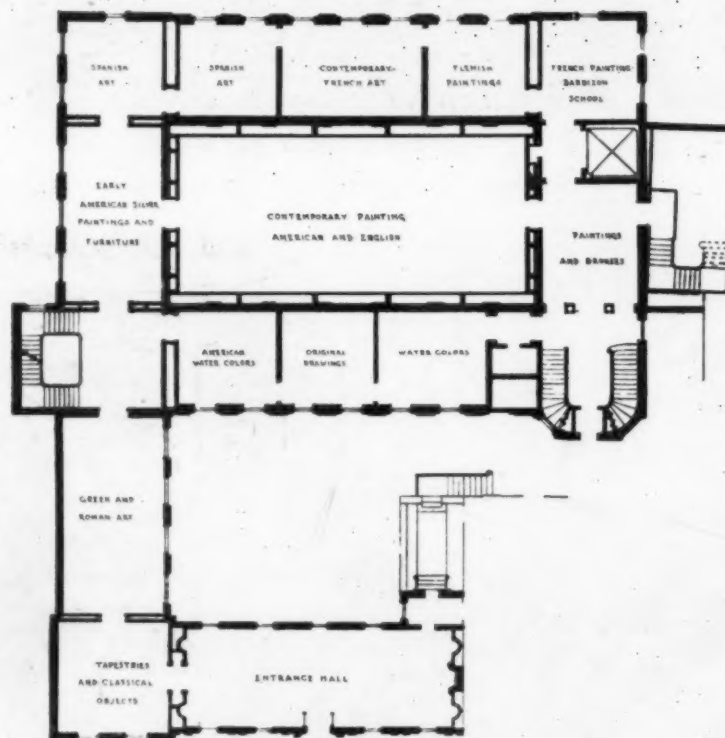
Photos, Paul J. Weber.

Plan and Section on Back

A GALLERY
RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE
WILLIAM T. ALDRICH, ARCHITECT



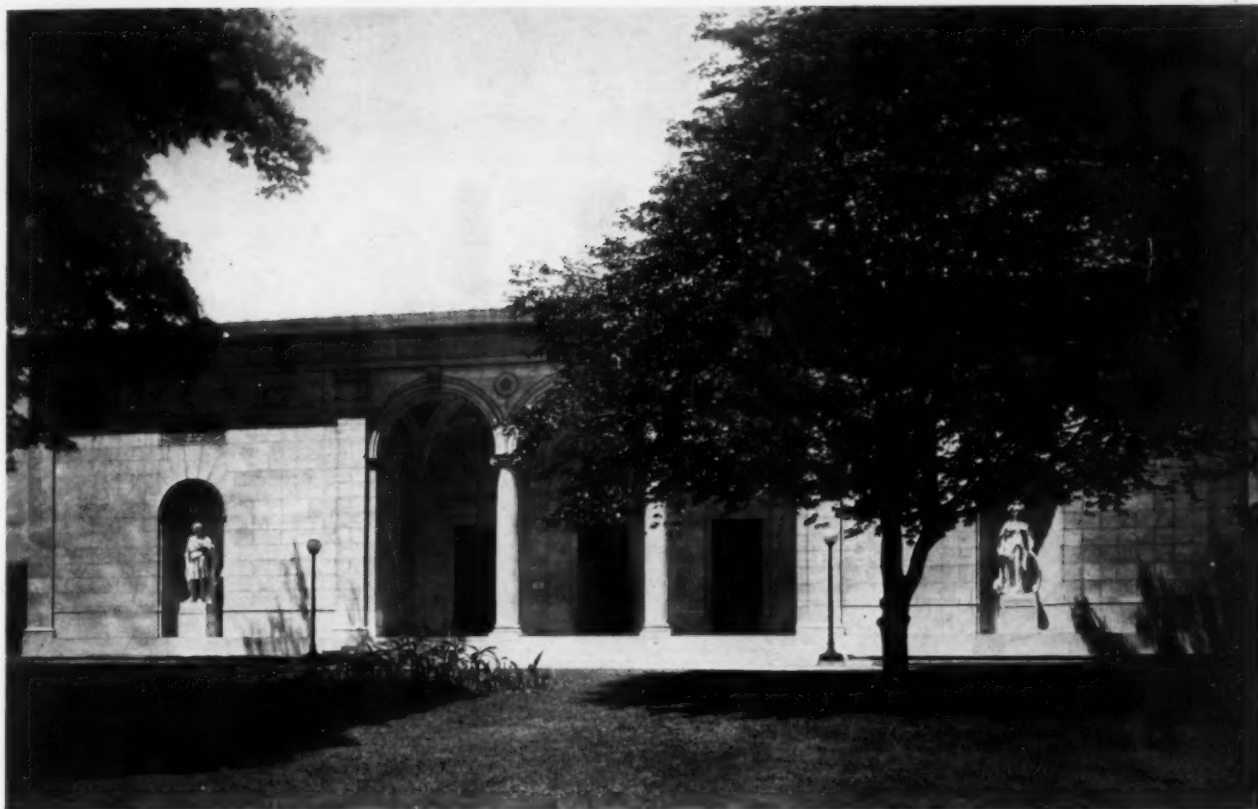
SECTION



ENTRANCE FLOOR

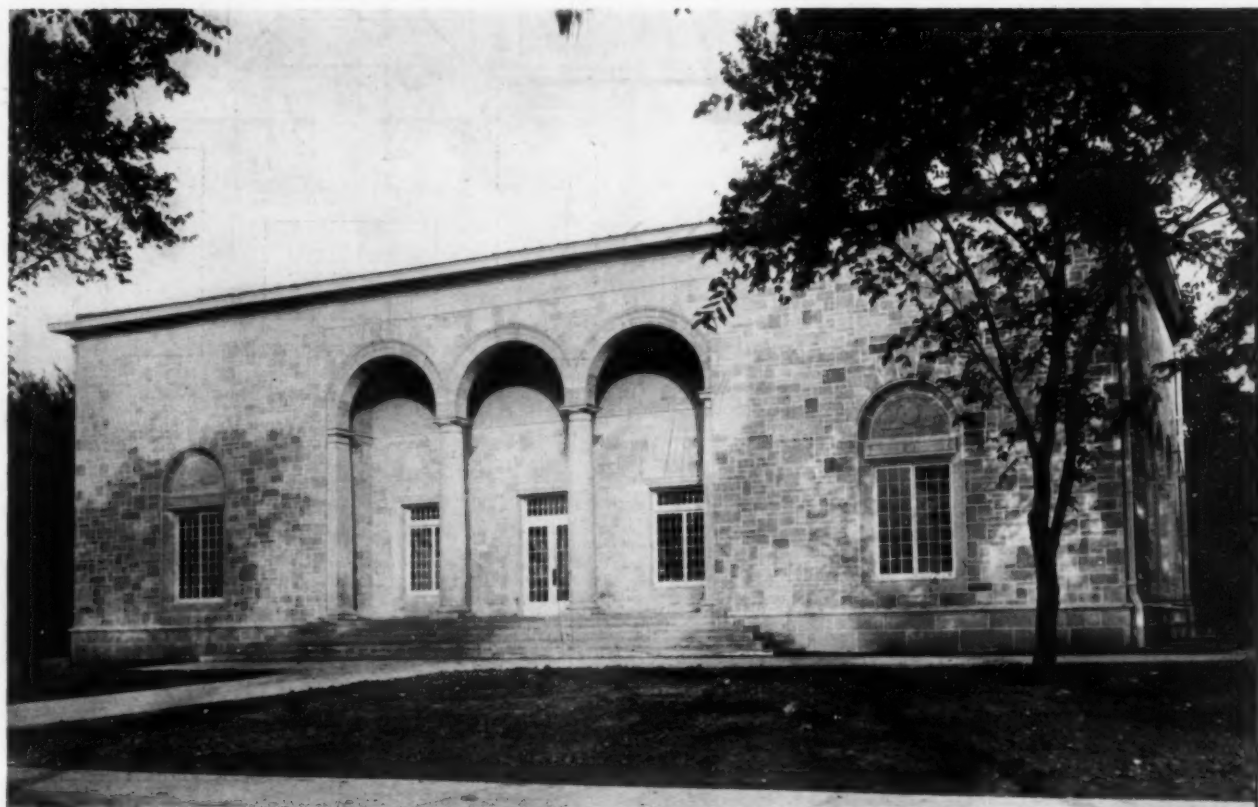
PLAN, RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE

WILLIAM T. ALDRICH, ARCHITECT



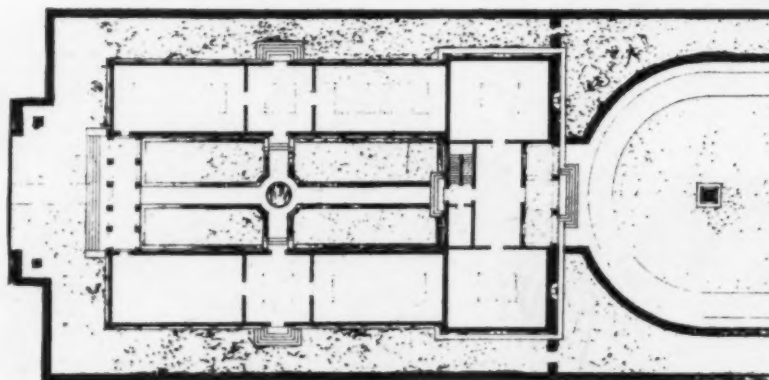
Plan on Back

BUTLER ART INSTITUTE, YOUNGSTOWN, O.
McKIM, MEAD & WHITE, ARCHITECTS

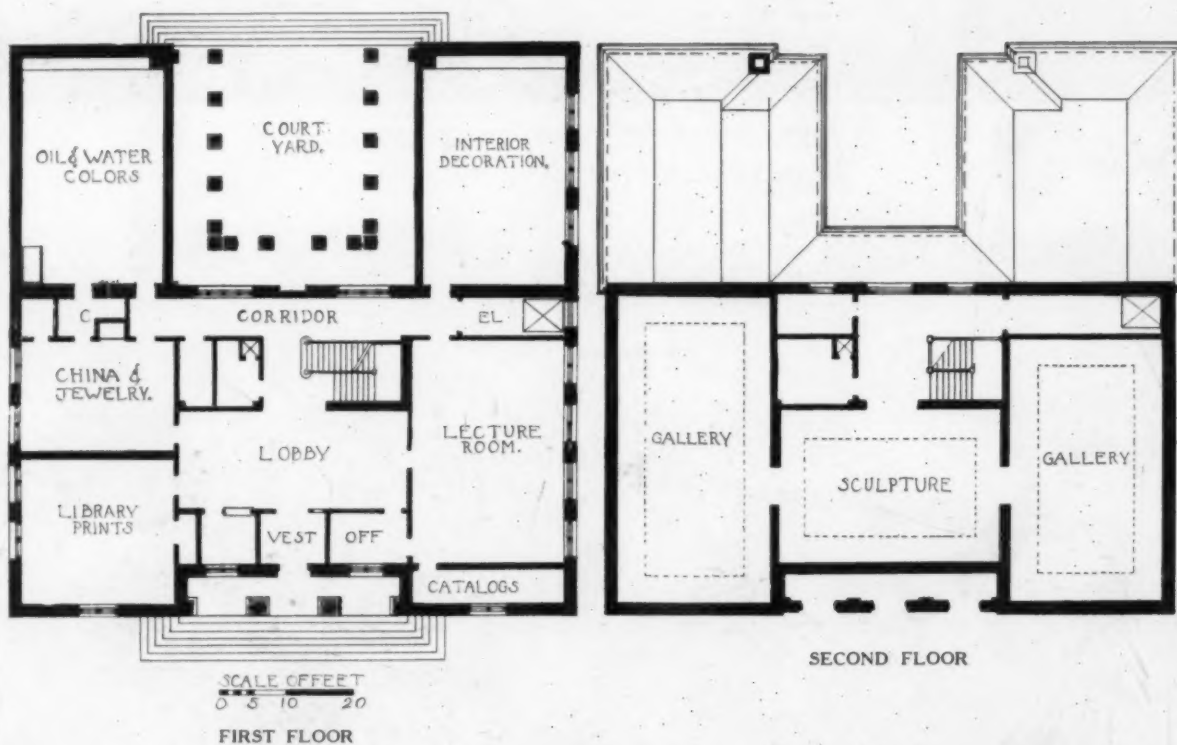


Plan on Back

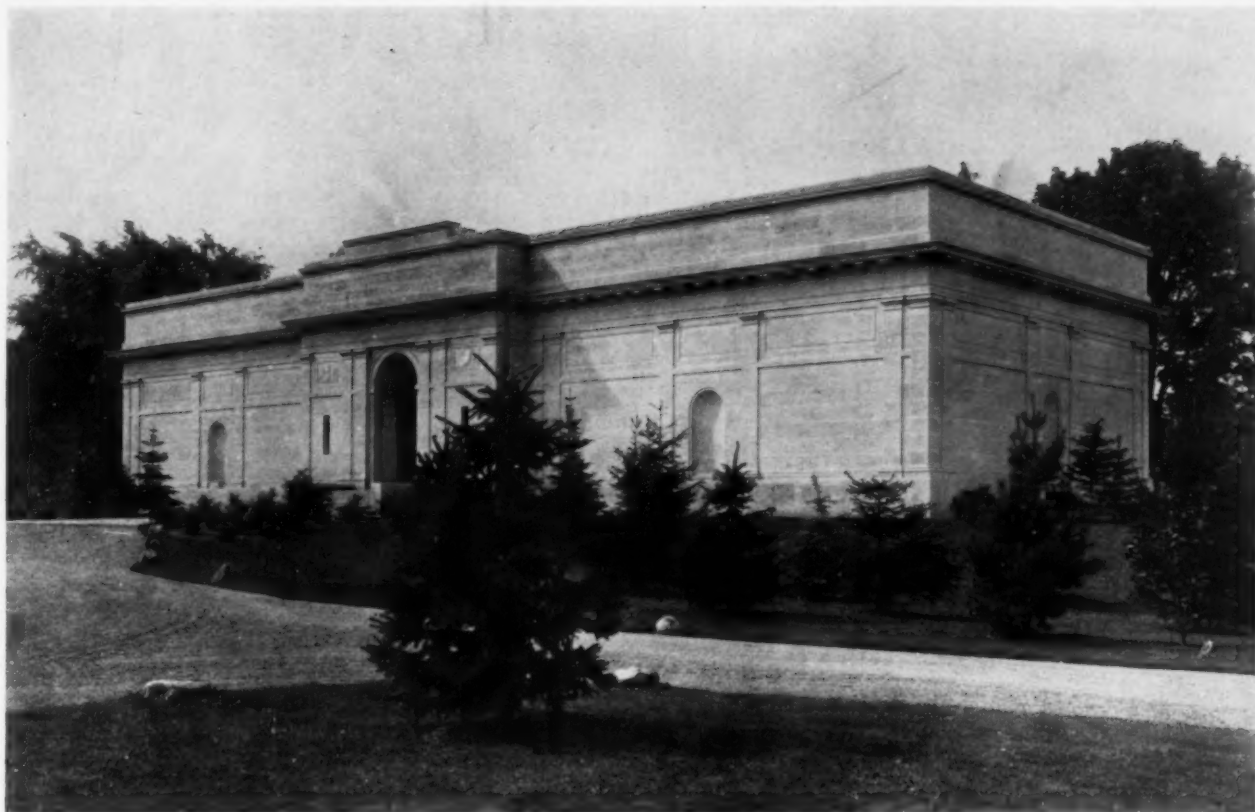
MULVANE ART MUSEUM, TOPEKA
THOMAS W. WILLIAMSON COMPANY, ARCHITECTS



PLAN, BUTLER ART INSTITUTE, YOUNGSTOWN, O.
McKIM, MEAD & WHITE, ARCHITECTS

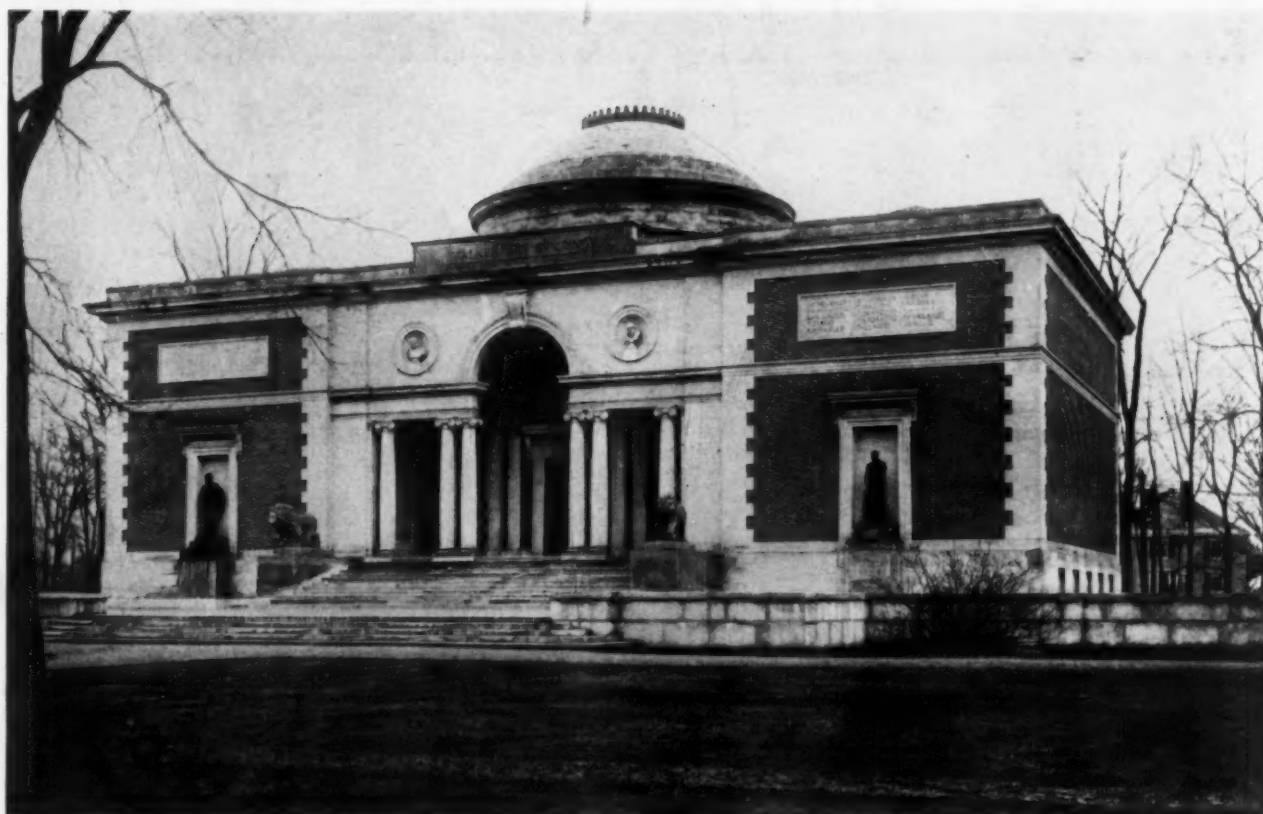


PLANS, MULVANE ART MUSEUM, TOPEKA
THOMAS W. WILLIAMSON COMPANY, ARCHITECTS



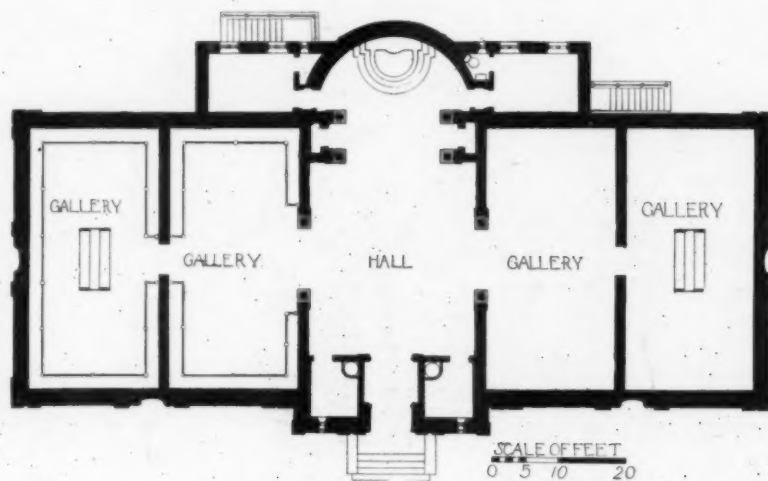
ART MUSEUM, HECKSCHER PARK, HUNTINGTON, N. Y.
MAYNICKE & FRANKE, ARCHITECTS

Plan on Back

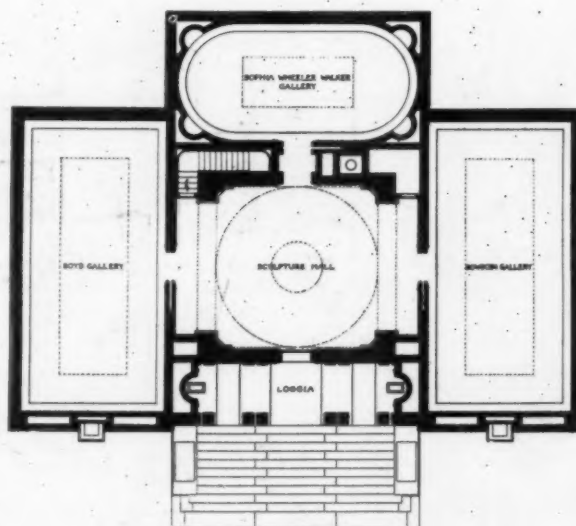


WALKER ART GALLERY, BRUNSWICK, ME.
McKIM, MEAD & WHITE, ARCHITECTS

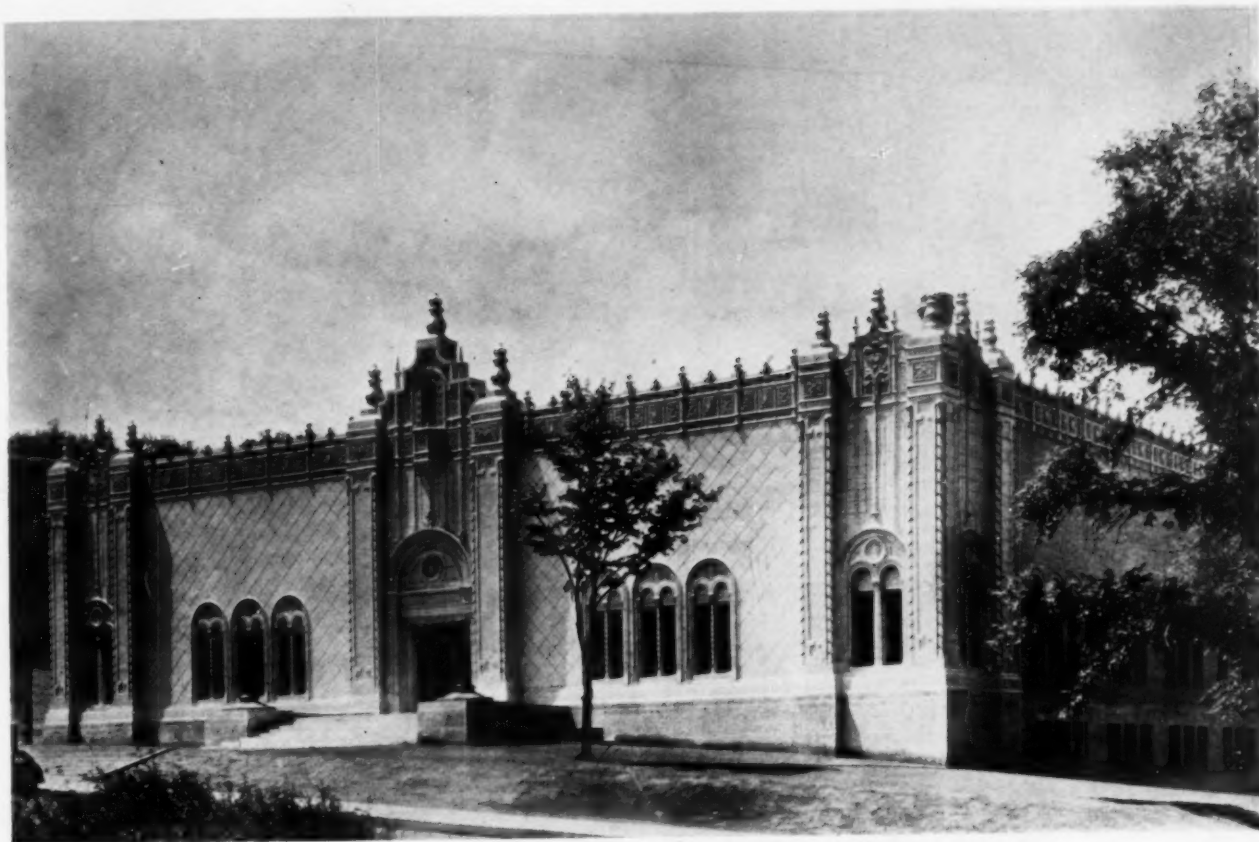
Plan on Back



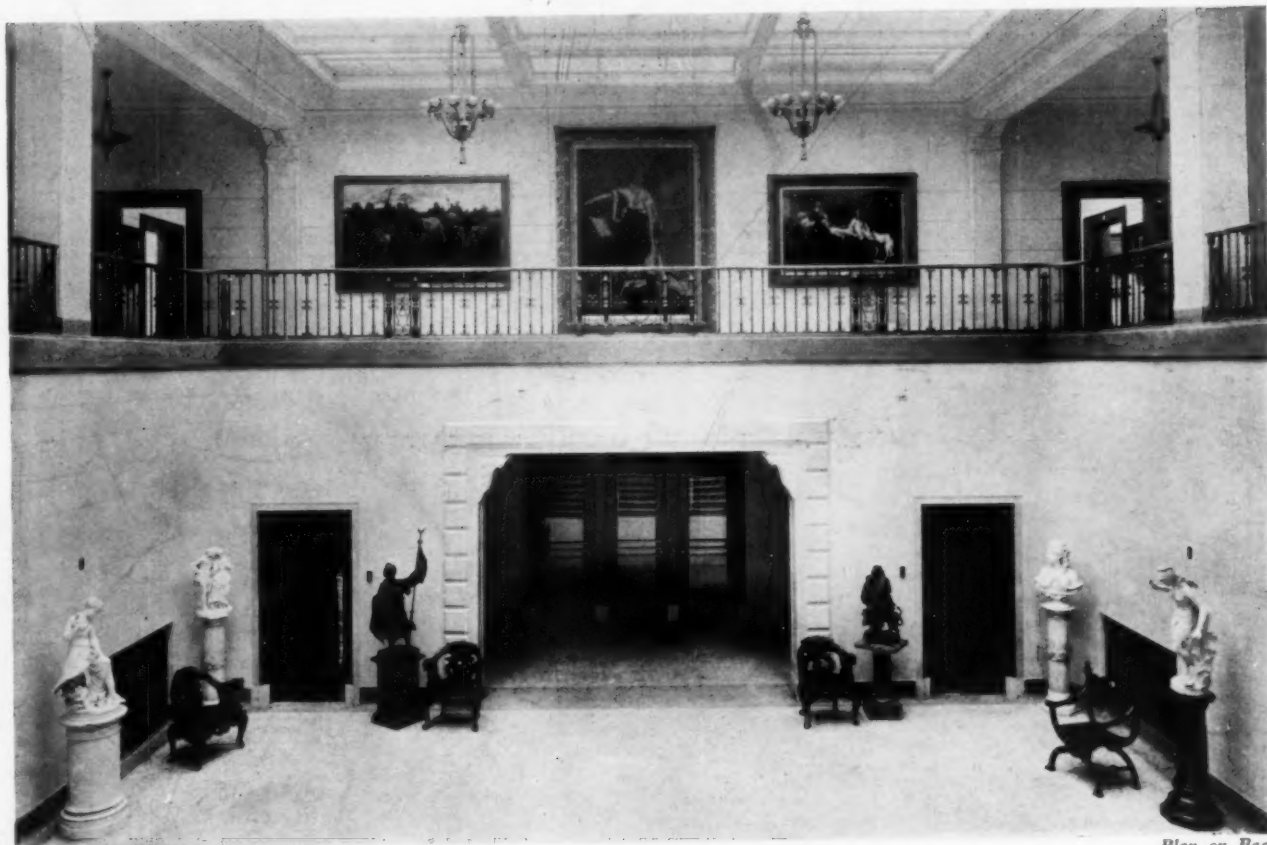
PLAN, ART MUSEUM, HECKSCHER PARK, HUNTINGTON, N. Y.
MAYNICKE & FRANKE, ARCHITECTS



PLAN, WALKER ART GALLERY, BRUNSWICK, ME.
McKIM, MEAD & WHITE, ARCHITECTS



ENTRANCE FRONT



Photos. Hibbard Studio

Plan en Bach

LOBBY
WALKER ART GALLERY, MINNEAPOLIS
LONG & THORSHOV, ARCHITECTS



PLANS, WALKER ART GALLERY, MINNEAPOLIS

LONG & THORSHOV, ARCHITECTS

Modern Museum Design

AS ILLUSTRATED BY THE NEW FOGG MUSEUM, HARVARD UNIVERSITY

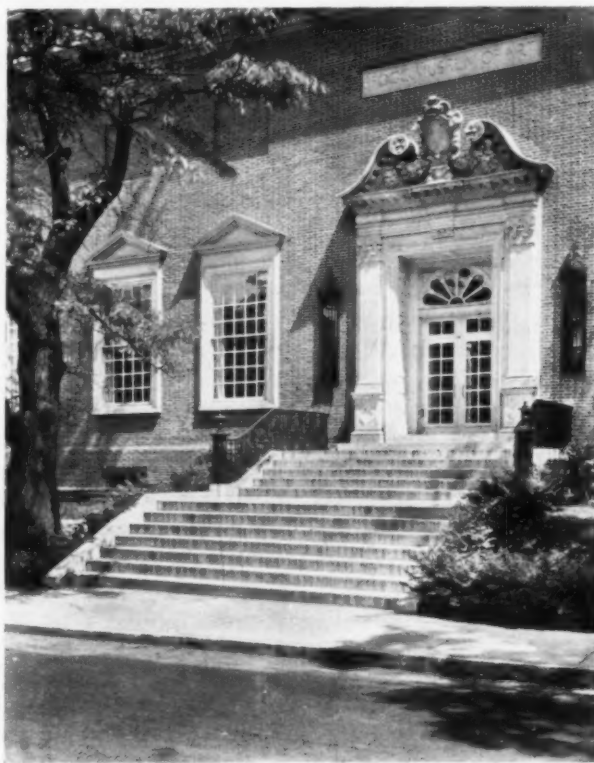
By MEYRIC R. ROGERS

FOR the past two decades there has been a growing realization, at least among those responsible for museum management, of the fact that the museum *parti*, as ground into members of the architectural profession during their student days, was responsible for a large share of their troubles. The idea of the monumental building,—something that would of itself adorn a municipality and memorialize its creator,—was, however, part and parcel of the professional *credo*, which it required more than vague, indefinite criticism to modify or eliminate. Of course the essential conception,—objects of beauty in a beautiful setting,—is not open to criticism, but the error lay in its interpretation, which emphasized the beautiful setting at the expense of the contents and showed practically no realization of how these contents were to be used thus enshrined.

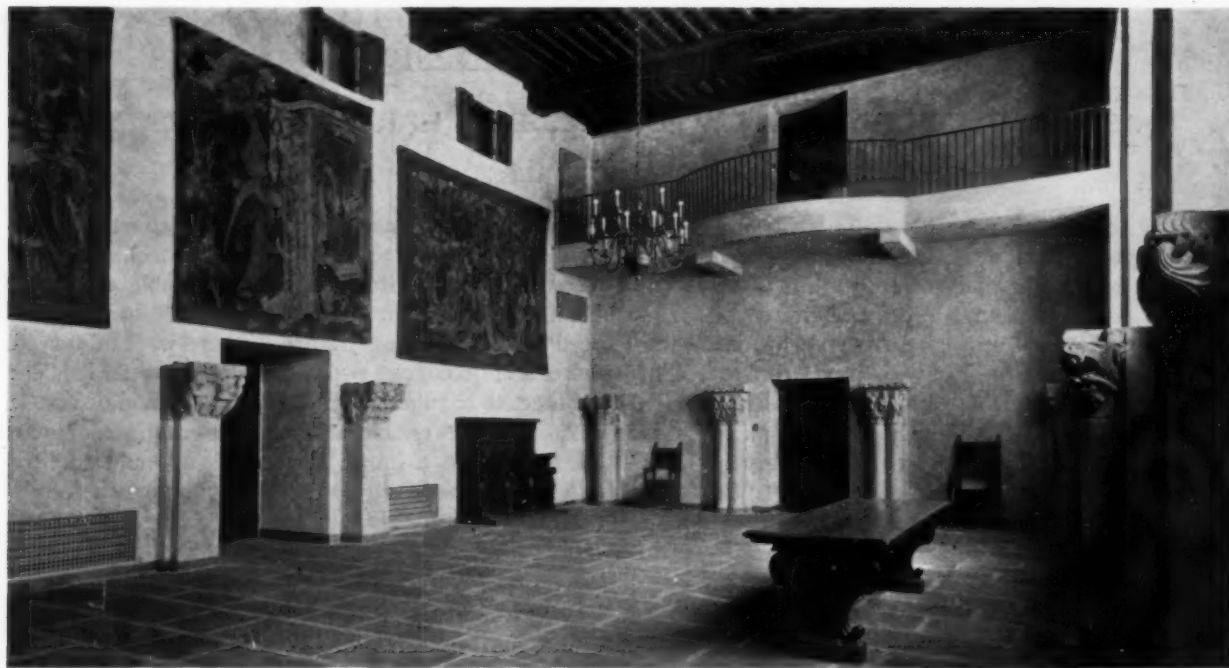
It is particularly in this last particular that the growth of museum methodology has demonstrated the undesirability of the usual scheme. The nineteenth century and its predecessors, save in a few instances, regarded the museum as a mausoleum,—a casket,—beautiful, if you will, for the preservation of the artistic remains of dead ages. Safekeeping of these remains was the main object. Use was considered secondarily, if considered at all. It is strange how long it remained unrealized that works of art were only worth preserving if they were worth seeing, and that a museum building could rationally justify itself only on the ground that it made works of art easily and pleasantly accessible for inspection and enjoyment. It was, therefore, not long after this theory began to be put into practice by museum managements that the inadequacy and wastefulness of existing buildings became evident, and the battle between the architect and the museum client was commenced. The blame for this misunderstanding cannot however, be laid entirely at the door of the architect. Too often those responsible for new mu-

seums were too inarticulate or vague, when questions of structural organization arose, to be of much help, and were often themselves unable to escape from the mortmain of monumental design,—as indeed they sometimes still are. There were advanced, therefore, no cogent arguments which would lead the architect to change his mind and his method of attack.

A complete enumeration of the requirements of the museum as a functional organism would take too much space in this prologue, since most of the essentials will be brought out in later paragraphs. We can proceed on the hypothesis that today a museum cannot be regarded as a beautiful tomb but must be considered as representing an organization with somewhat complex functions, all turning upon the availability and display of its collections. This is the heart of the matter. A museum must be designed from the inside out; in its simplest terms, a museum building is merely an efficient and pleasing background. From this it is easy to see that museum designing requires at least a degree of the technological knowledge that planning of modern hospitals, hotels and business buildings has long demanded. To afford this, it comes as a corollary that museum managements should not only be more explicit as to their requirements, but that they should also appreciate the architectural problems involved, so that their demands may be within the bounds of reason. In this country the fruits of such a realization as the basis for a scientific attack first appeared in the Cleveland Museum, as planned by Hubbell & Benes (Plate 120), and in the new building of the Rhode Island School of Design, by William T. Aldrich (Plate 125). Although somewhat complicated by additional functions necessary for the requirements of a university department, the new Fogg Museum of Harvard University is, perhaps, the most complete as well as the latest result of thoroughgoing coöperation between the architect and museum authorities. At any rate,



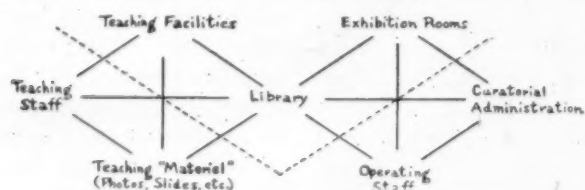
Entrance, New Fogg Museum
Coolidge, Shepley, Bulfinch & Abbott, Architects



The Great Hall, New Fogg Museum

this will serve as a definite instance in which the requirements were explicitly stated and met four-square, with rather interesting results in many ways.

General Layout. The accompanying diagram will serve to bring out both similarities and differences between the simple museum problem and those which were set by the special requirements of the Fogg. In this instance the areas indicated above the dotted lines are considered as being available to the public.



It was taken as a cardinal principle that the building must meet squarely the requirements laid down, and as far as possible express the functions embodied in these requirements, as directly and simply as possible. Any preconceived monumental form was, therefore, rendered impossible. The building that resulted consists of a four-story structure surrounding three sides of an enclosed court, the fourth side being of two stories and extending about half its own length, with a longer and lower facade on the fourth side, which faces the street. The museum portion of the building, being that directly available to the public, finds itself, naturally, in this lower front portion;—that in the rear is devoted partially to space occupied by the teaching departments, though even in this section the first two floors are devoted to purposes which are a necessary part of any museum. The basement and sub-basement furnish in the main space for the workrooms of the operating staff, storage, and the mechanical plant.

Only the two upper stories of the rear portion are used entirely for university purposes. It may be seen, then, that in the main, the Fogg Museum offers in its two main floors and basements a solution of the museum problem. It is this that concerns the present article, since it is of broad or general application.

First Floor. At the outset it was considered undesirable that the interior should bear the stamp of any particular architectural style, though in conformity with the exterior treatment, itself determined by surrounding buildings, the architectural detail used would necessarily be of a modified classical character. The most striking feature of the first floor plan,—the central court,—apparently violates this rule of non-stylistic simplicity. As a matter of fact, however, it is the exception that proves the rule, for it was particularly desired that this space should not be used for exhibition purposes, but should be what is known as a "rest-area," to which visitors to the museum could constantly repair between periods of concentrated study of the collections. Since the scheme as developed logically called for a court with surrounding corridors, two treatments were possible,—on the one hand an open-air court, made attractive by growing plants, or on the other a glazed-in court, which would have to rely on its architectural treatment for interest. Climatic conditions made the success of the former plan extremely doubtful. The latter scheme, therefore, was adopted. For such a problem, Italian precedent was the obvious thing to follow, and the designers were fortunate enough to find that they could use, practically without change, the two-story arched motif designed by Antonio da Sangallo for his house at Montepulciano. This was developed and carried out in the material used in the original (Italian traver-



Gallery VIII, New Fogg Museum

time) and so serves a secondary purpose as an example to the students of historical architectural excellence. It is hoped that a center fountain will eventually complete the design of the court. The plaster walls and groin vaults of the surrounding corridors have an extremely simple treatment, suggested by the original and quite in harmony with the general scheme of the building. The only other feature of this plan which could in any way be called monumental is the great hall, a two-story room of some 35 x 50 x 28 feet. This was intended to serve a double purpose, first as a gallery where large pieces of woodwork and tapestries could be shown and, second, as a concourse in connection with the lecture hall below. Again the treatment is of extreme simplicity, the walls being of plaster carefully toned and waxed, but having no architectural character except that derived from their proportions. What stylistic character it has is given to it by the sixteenth century French ceiling, which is itself one of the exhibits, installed at the time of the construction.

The remainder of the exhibition space on this floor consists of a series of small galleries, side-lighted, as in the case of the great hall, and intended for the display of the classical collections and for the use of the Oriental Department. Most of the objects in these collections are, of course, three-dimensional, for which side light is particularly desirable. The average size of the galleries is roughly 25 x 35 or 40 feet. They have a uniform height of 16 feet, and are lighted as far as possible from one side only by large windows reaching from a few inches below the ceiling to about 3 feet above the floor. The quality and quantity of the light admitted are controlled by adjustable opaque shades and by draw curtains of unbleached cotton. While the floors

of the court, corridors, and great hall are of flagging, those of the galleries are of broad-board, solid teak left in its natural color and waxed. It is hoped that in the course of time these floors will darken naturally, and that to a large extent the curling consequent upon the dampness present in a new building will eventually straighten out. The galleries have a very simple plaster cornice and a narrow base of dark green terrazzo. Each gallery has a steel hanging rail concealed in the lower member of the cornice, and the walls are finished uniformly in a natural linen laid over waterproof building paper on a nailing surface of two-ply, cross-laid, $\frac{7}{8}$ -inch spruce, backed in turn by terra cotta. This wall construction affords complete flexibility for installation of works of art and has been used practically throughout the building. The wood backing has been treated with a salt solution for fire protection, but such a precaution is not really necessary, since the material is so compact that combustion is almost impossible. In conformity with the general scheme, the doorways and windows are simple openings without architectural trim. For artificial lighting the simplest possible enclosed bowl fixtures have been used, suspended in single units from the ceiling. Ample opportunity is given for special lighting and emergency use of electric current by numerous base outlets.

From experience so far it would seem that this extremely simple treatment, relying as it does upon good proportions and pleasant tones, is most satisfactory for the usual small gallery. The rooms used by the Department of Prints on the same floor are treated in a similar manner and have proved to be eminently satisfactory. The special nature of the problem necessitated for the library and its adjuncts a much greater space than would ordinarily have



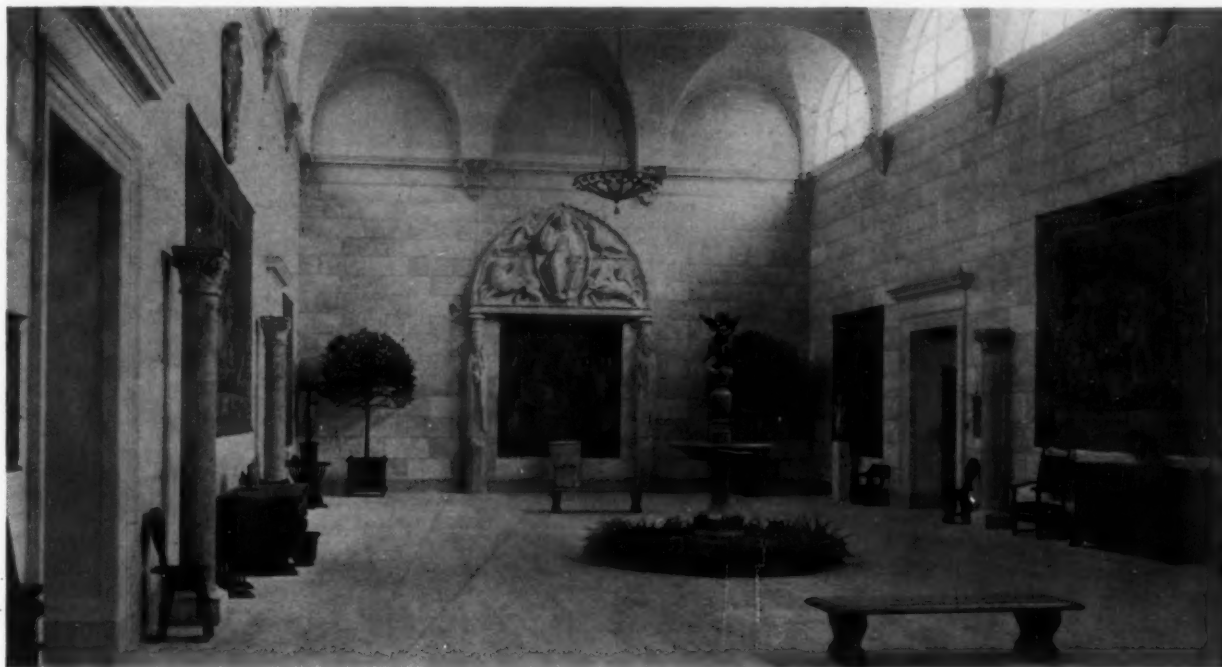
Gallery, Freer Gallery of Art, Washington
Charles A. Platt, Architect

been required in a museum of this size. In this instance special provision had to be made for use of this section of the building when the rest of the museum would be closed to the students and public, and facilities had to be afforded for large stack space and ample room for the cataloguing service. Furniture of the simplest possible type of natural oak, and tinted plaster walls, have proved satisfactory. For aiding study, different floor materials have been used, in both the print room and the library, from those used in the galleries. The floors of the print rooms are of fumed oak, and cork tile has been used in the library, and use of these materials is successful.

Second Floor. In the conventional museum scheme, derived as it is from the European palace, the second floor is usually given preëminence, and the fact is advertised by the use of a monumental staircase which faces the visitor immediately upon entering the building. In this particular instance, however, the two floors are of equal importance, and the stairway, so likely to inflict the visitor immediately with the anticipatory pains of muscular effort, has been relegated to a corner position where it is convenient but not conspicuous. Besides the main staircase for public use there are the service stairs in connection with the freight elevator, and an emergency stairway in the rear of the building. An automatic passenger elevator is also provided for the convenience of the staff and for the aged and infirm among the public. The second floor arrangement is essentially similar to that of the lower floor, where also the exhibition unit is considered to be the gallery and its adjacent corridor. This unit makes it possible to isolate any gallery without affecting the general circulation, and where the ex-

gencies of the plan make its use impossible, the galleries have been so arranged that isolation is still obtainable. The finish of these corridors, in conformity with those on the first floor, is of plaster, but the floors are of reddish brown matt-glazed tile. The exhibition galleries correspond in size to those on the lower floor, and are for the most part top-lighted for the exhibition of paintings and prints.

Gallery Lighting. Top lighting, though rather expensive in construction and open to many objections, still seems to be the best method of lighting picture galleries. It is economical of wall space and is capable of giving equal light on all four walls as well as admitting the greatest possible amount of light. Clerestory lighting, which is a compromise between top lighting and side lighting, is practically impossible of application in small galleries, since it necessitates a disproportionate height and does not offer enough advantages in compensation. Monitor lighting has the disadvantage of eliminating by its very structure most of the light available, and in small rooms it creates an unpleasant appearance. By a process of elimination alone use of the skylight and flat sub-skylight holds the field. It has the great disadvantage of creating down glare and a tendency to throw most of the light upon the floor instead of upon the walls. A great deal of thought was given to this subject in connection with the Fogg, and all available experimental data were used in determining the exact method to be adopted in the treatment of the problem. As determined finally, the sub-skylights, some 15 feet from the floor, occupy practically the entire ceiling area, coming to within 18 inches of the walls. To get as even an illumination as possible, the diffusing chamber between the sky-



Addition to Memorial Art Gallery, Rochester

McKim, Mead & White, Architects

light and sub-skylight was made almost equal in height to the gallery proper, reckoning from the peak of the outer skylight. The glass used in the sub-skylight is plain white, hammered and wired plate, but the central panels have been acid ground to increase the diffusion and to lessen the vertical component. This in theory and in practice tends to equalize the light on floor and walls. Further adjustable control is given by the use of a louver system following the slope of the upper skylight. These louvers are of cloth and are operated by hand control from the gallery floor. The louvers govern the admission of direct sunlight and also tend to equalize the light on opposite walls. Unfortunately, the run of the galleries north and south somewhat lessens the effectiveness of this louver system, but any adjustment which tended to be more efficient in sunlight control tended to upset its equalizing qualities. The result is very satisfactory, since in spite of much greater illumination there is less glare than is usually found in the top-lighted gallery with deep coves. The interior finish of these galleries is the same in every practical respect as in those below.

Besides these top-lighted galleries, several small side-lighted rooms were devised for the exhibition of prints and drawings. Small cabinets offer the best background for small-scaled objects of this sort. These cabinets are arranged as a series of alcoves, their side walls canted to catch more directly the light from the windows. Artificial lighting in these alcoves is of the direct ceiling type, but in the top-lighted galleries the fixtures are installed above the sub-skylight. Considerable difficulty was encountered here because of the variation in the diffusing power of the sub-skylight glass, but it has been found that

shadows are eliminated and an even light obtained when the fixtures are bunched directly above the center diffusing panel. Before leaving this subject, it should be noted as highly desirable that when such galleries are designed the diffusing spaces between the two skylights should be kept as open and free of structural members as possible, at least for a space of 6 feet above the skylight. This will result in economies in the upkeep of the museum as well as in greater flexibility in the installation of equipment. Self-supporting skylights of steel are desirable.

Unique Storage Facilities. A feature that is new in museum design is the placing of the picture storage rooms on the same floor as the exhibition galleries. This, while seemingly using valuable space for secondary purposes, has the great advantage of making those paintings not on exhibition readily and easily available for study under conditions largely similar to those afforded by the galleries. The storage of paintings in a basement without daylight is bad for the paintings as well as being a somewhat ignominious treatment for worthy works of art. This "painting study room," as it is called in preference to "storage," is equipped with a series of sliding screens of heavy wire mesh which convert the room into what is really a gigantic vertical file. The screens are supported from the ceiling on a double trolley, which prevents side swinging and makes it unnecessary to cut up the floor with rails. The appearance of this installation can be judged well from one of the accompanying illustrations (page 559). It is intended that this room should be kept in order and that it should be as pleasant a place as the galleries themselves. The room is, of course, equipped with the same facilities for heating, ventilating and



Photos, Paul J. Weber

DOORWAY DETAIL

MUSEUM OF THE RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE

WILLIAM T. ALDRICH, ARCHITECT



MAIN ENTRANCE
MUSEUM OF THE RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE
WILLIAM T. ALDRICH, ARCHITECT

humidifying as are the galleries. The third and fourth floors are specially designed for use of the teaching staff's university department, and are not vital parts of the museum itself; though the space furnished by a third floor would be useful for work-rooms and additional offices in any art museum.

The Basement. With the exception of the areas occupied by library stacks and cataloguing room, the basement was designed mainly with the museum functions of the building in mind. A wide drive from the street gives access to the receiving room on the north side. The receiving room, occupied mainly with the receipt and shipping of works of art, is in direct connection with a room for packing and with the offices of the superintendent and registrar, the main storage space, and the freight elevator. A height of 12 feet in the clear has been kept throughout these areas, which are separated from one another by large double sliding fire doors. The walls are of hard plaster, and the granolithic floors are treated with a dust preventative. A large vault has been provided in connection with the main storage area, and it is needless to say that the latter can never be too large. Besides these facilities, the basement offers a special storage room, study room and curator's office for the Oriental Department, a grouping particularly useful in the design of a departmentalized museum. In addition to these services there are additional work- or classrooms and a darkroom and a workroom for a photographer. It is still a moot question whether daylight is necessary in this latter case. The public lavatories are also on this floor, connecting with the main circulation areas as well as with the lobby of the main lecture room, which is situated below the great hall.

The Lecture Room. It should be noted that the lecture room, where artificial light is all that is necessary, though daylight has been provided, can be opened to the public at times when the rest of the museum is closed. It has a separate entrance from the street which is also in direct connection with the great hall which can be used either with it or not at will. This feature, of course, is important in a university building, but it is even more valuable in the case of an ordinary museum plan, since many public lectures are given in the evenings when the



Gallery, Cleveland Museum of Art
Hubbell & Benes, Architects

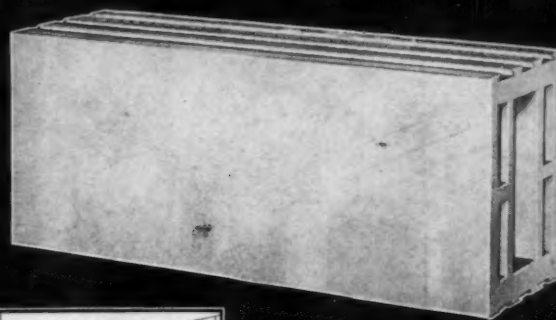
galleries are closed. The lecture room seats about 400 and is equipped with projecting apparatus which makes it possible to throw two pictures side by side on the screen for purposes of comparative study. The floor of the lecture room is of cork tile, and it has an average slope of 1 foot in 20. The lecture platform is raised only about a foot above the floor and is in the form of a shallow recessed stage about 9 feet deep. The back of the stage, finished in plaster, is left unpainted to serve directly as a screen for the stereopticon. The lecture room walls are of plaster of medium density, and the ceiling, which is treated with shallow coffers, is partly of sound-absorbent plaster. The room

is lighted by nine single direct units with dimmer attachments. Each unit has a parchment shade specially designed to eliminate side glare and to furnish sufficient direct downward light for note taking.

The Exterior. The exterior of the building developed directly from the fulfillment of plan requirements and, as such, offered a very difficult problem to the architects, since the solution had to conform with the accepted Georgian Colonial of the surrounding buildings. Use of the materials, brick with limestone trim, was dictated both by this and by questions of cost which, unfortunately, also made it necessary that most of the window trim be of wood rather than of stone. The architects met this problem, as well as many others, in an exceedingly able fashion, for though the resulting facades may be open to certain architectural criticisms from an *a priori* angle, no pretense was made of doing anything more than directly expressing what plan and section required. The effect, without and within, depends upon simplicity and on the qualities derived from studied proportions, careful fenestration, and an appropriate treatment of textures. The building is well within the well known "Harvard tradition." It is in architectural accord with the oldest of the Harvard buildings, not far away, as well as in agreement with most of those built at different periods later.

EDITOR'S NOTE. In addition to being associated with Coolidge, Shepley, Bulfinch & Abbott as Consulting Architect in designing and planning the Fogg Museum, Mr. Rogers was Associate Professor of Fine Arts at Harvard. He was formerly a member of the staff of the Metropolitan Museum, and now has become Director of the Baltimore Museum of Art.

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HOLLOW BUILDING TILE

Volume XLVII

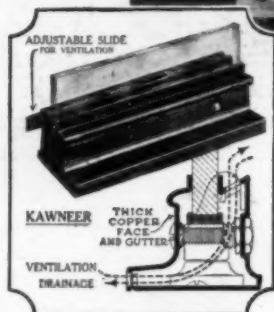
THE ARCHITECTURAL FORUM

Number 6

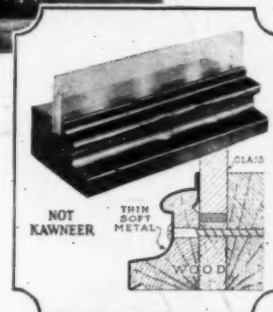
Published Monthly by Rogers & Manson Company, 383 Madison Avenue, New York, N. Y. Yearly Subscription: U. S. A., Insular Possessions and Cuba, \$6. Canada, \$6.75. Foreign Countries in the Postal Union, \$7.50. Single copies: Quarterly Reference Numbers, \$2; Regular Issues, 60 cents. Entered as Second Class Mail Matter at the Post Office, New York, N. Y., under the Act of March 3, 1879.



Chamber of Commerce Building, Indianapolis, Indiana.
Robert Frost Dagget, Architect.
T. A. Moynahan Construction Co., Contractors.



Photograph and diagram of a Kawneer hollow metal sash. Age and rough usage will not affect its strength and beauty. The heavy copper mouldings from which Kawneer sash and bars are built require no wood reinforcement.



Wood strips covered with thin metal (to imitate Kawneer shapes) are perishable, thus endangering the safety of the glass. The thin, soft metal is easily dented and marred.

All store fronts in the above building equipped with Kawneer Solid Copper Store Front Construction.

We are in a position to fill your specifications whether for a front of the most simple or the most ornate design.

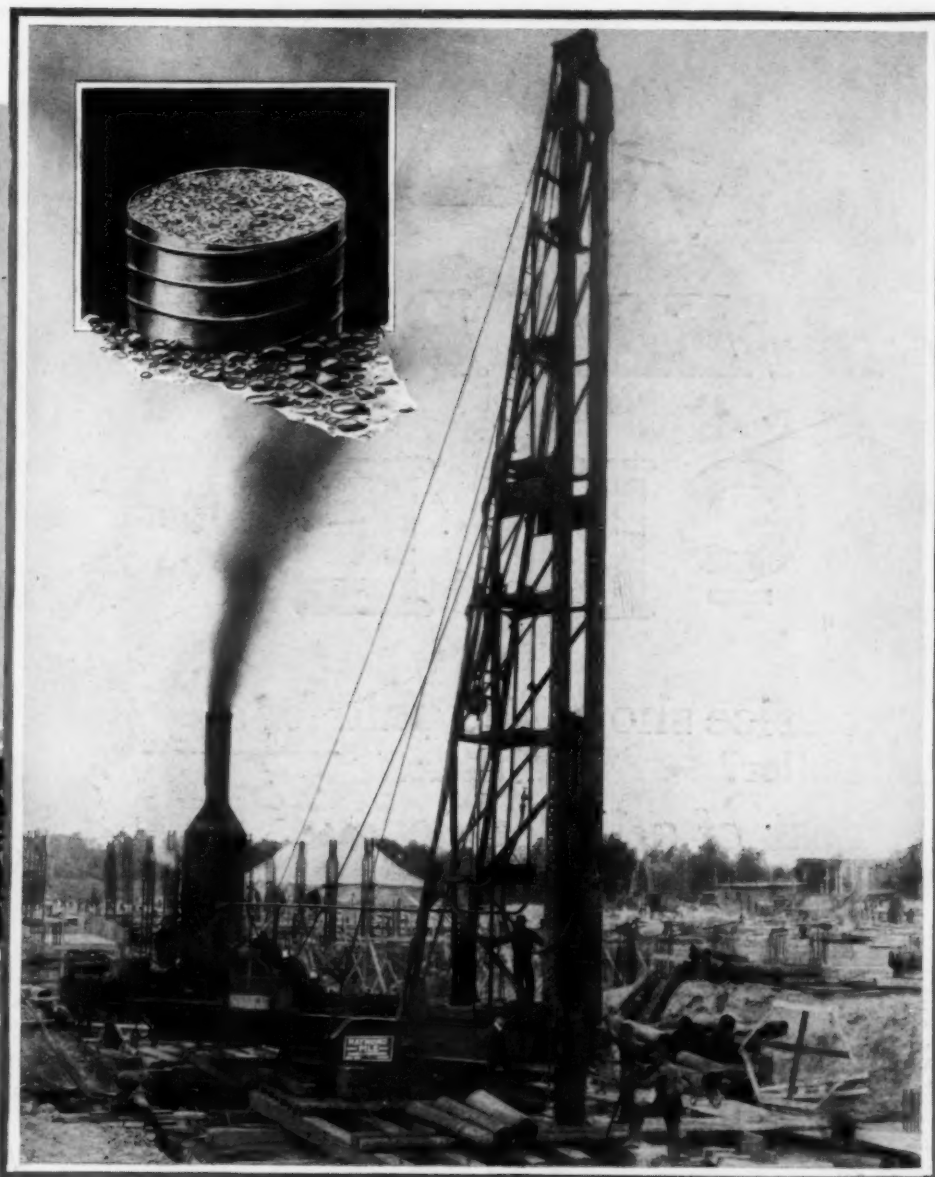


THE
Kawneer
COMPANY

NILES

MICH.

BRANCH OFFICES AND SALES AGENCIES IN 128 CITIES



—and now for interior inspection!

Study the picture. The Raymond steel shell has been driven. The core is about to be withdrawn. This leaves the interior of the driven shell open. You can SEE its condition from point to top *before* concrete is poured in. And you can be certain its protection is *permanent*—because every shell is left in the ground.

RAYMOND CONCRETE PILE COMPANY

New York: 140 Cedar St. Chicago: 111 West Monroe St.
Montreal, Canada

Branch Offices in Principal Cities

A Form for Every Pile A Pile for Every Purpose

RAYMOND

KEWANEE

STEEL Riveted

BOILERS

**L
O
W**

**H
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a
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C
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s
t**

What price should be paid for a heating boiler?

The cost of a boiler depends on the heating service expected. And the necessary factors of construction to insure that *heating service* must be *built-in the boiler*.

So the purchase price must permit putting in- to it, the necessary material, both in quality and quantity, to

stand the wear and tear in the service demanded. Of course the name of the maker should be a guarantee of workmanship and his reputation an assurance that all requirements of design for efficiency have been fulfilled.

With a *Kewanee Steel-Riveted Boiler* you may be sure of getting not only *full value for your purchase money* but also the benefit of substantial upkeep savings, both in fuel and in repairs, year after year.



KEWANEE BOILER COMPANY

Kewanee, Illinois

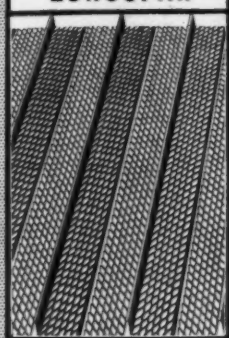
Branches in Most Leading Cities

STEEL HEATING BOILERS RADIATORS WATER HEATERS TANKS AND WATER HEATING GARBAGE BURNERS

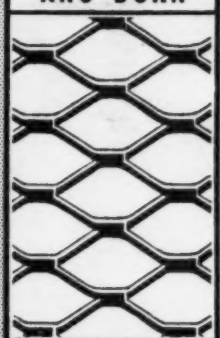
NORTH WESTERN METAL LATH



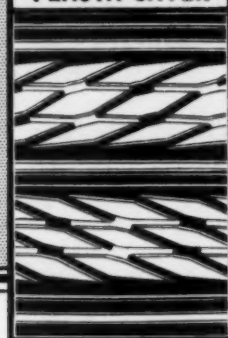
LONGSPAN



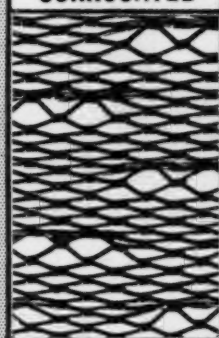
KNO-BURN



PLASTA-SAVER



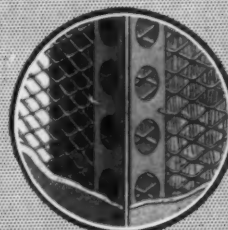
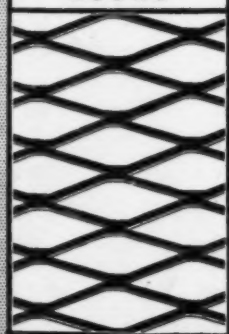
CORRUGATED



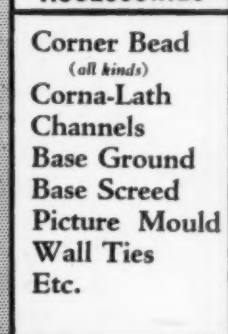
STEELHART



ECONO



ACCESSORIES



*Ask Us What You
Want To Know About—*

METAL LATH

WHEN Metal Lath is indicated you naturally desire your specification to embody the veritable "last word." Yet this material is but one of the many hundred items on which you must pass. And the human brain is not infallible.

Here, then, is where our 43 years' experience in producing Metal Lath and contacting with thousands of architects who are using it, becomes helpful.

This information is always at your disposal. We make a *complete* line of Expanded Metal Products and are ready to submit—

*(RECOMMENDED SPECIFICATIONS for any
type of Metal Lath construction and SAMPLES)*

NORTH WESTERN EXPANDED METAL CO.
1234 Old Colony Building
CHICAGO



IRA ALLEN CHAPEL, UNIVERSITY OF VERMONT, BURLINGTON, VERMONT.
McKim, Mead & White, Architects.

CORRECT acoustics have been secured with the use of AKOUSTOLITH SOUND ABSORBING PLASTER on plain surfaces of ceiling.

Many other installations have been made in auditoriums, churches, banks, hospitals, offices, etc., thereby preventing excessive reverberation.

As pioneers in the field of masonry acoustical materials, we developed AKOUSTOLITH PLASTER, an all masonry material, installed by the plastering contractor at a cost per unit of absorption less than with any other material.

In contrast to the combustible acoustical correctives, AKOUSTOLITH PLASTER is a fireproof material easily cleaned and decorated, making it possible for the architect to secure the highest acoustical efficiency using structural materials.

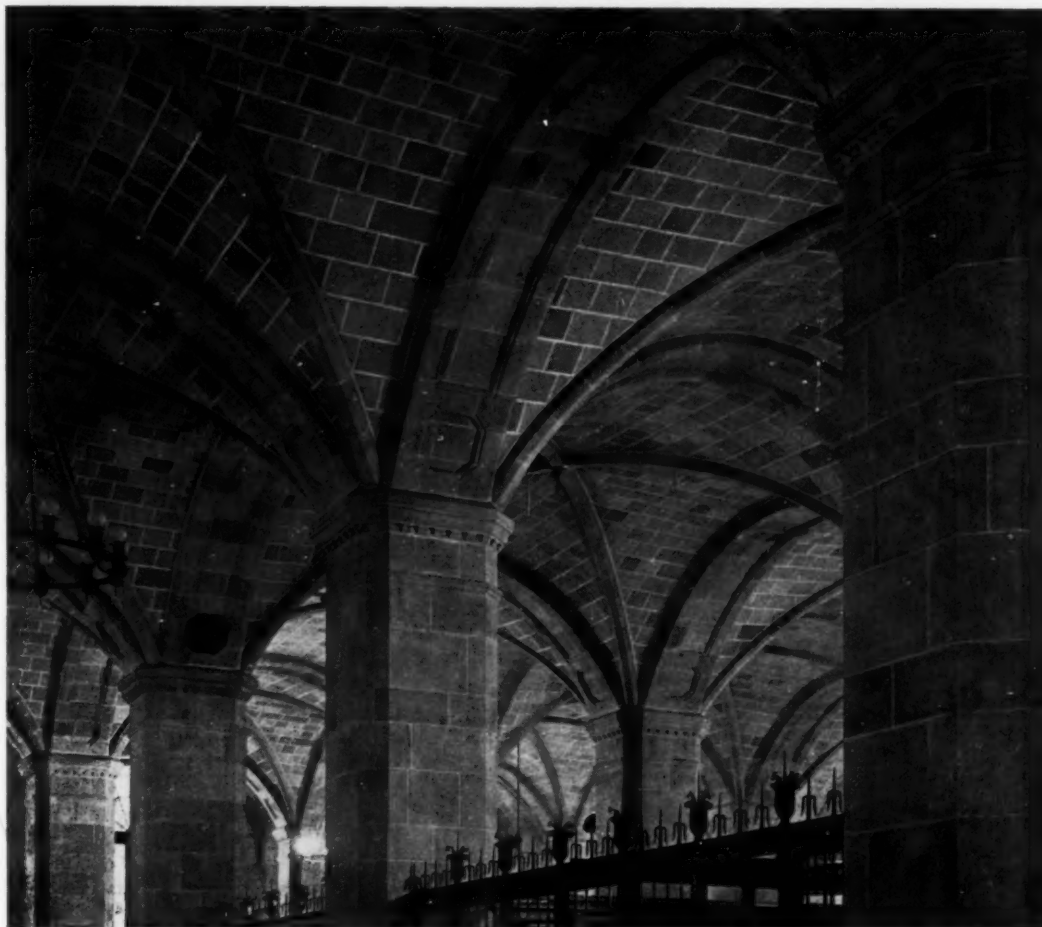
Specifications and absorption data sent to architects on request.

R. GUASTAVINO CO.

225 West 34th Street
New York City

40 Court Street
Boston

R. Guastavino Co. of Canada, Ltd.
New Birks Building, Montreal



Main banking room of the FEDERAL RESERVE BANK, NEW YORK CITY.
York & Sawyer, Architects.

AKOUSTOLITH sound absorbing tile is here laid up in random size and color as in filling between stone ribs and groins.

AKOUSTOLITH is a masonry material having a sound absorbing or acoustical value many times greater than that of ordinary plaster.

AKOUSTOLITH is made in a variety of textures, usually of a fine granular appearance, and can be made to closely resemble the usual building stones employed for interiors.

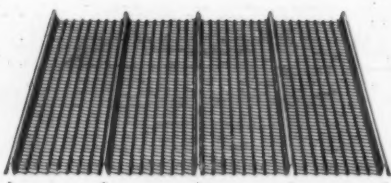
AKOUSTOLITH is manufactured in a wide range of colors—ranging from grey white through various shades of buff, brown or any colors resembling those of building stones.

R. GUASTAVINO CO.

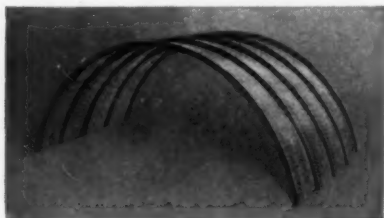
225 West 34th Street
New York City

40 Court Street
Boston

R. Guastavino Co. of Canada, Ltd.
New Birks Building, Montreal



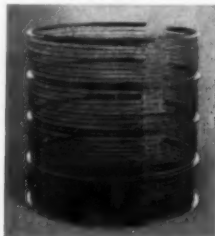
Sheets 24" (covering width) Standard lengths 4, 6, 7, 8, 9, 10, 11 and 12 ft. Made from Steel or "Coppered Metal", painted, No. 28 Ga., No. 26 Ga., and No. 24 Ga.; or No. 28 Ga. Galvanized; or from ARMCO Ingot Iron, painted, No. 26 Ga., and No. 24 Ga., or from Galv. ARMCO, No. 28 Ga. Ribs 6" on centers; $\frac{3}{4}$ " high.



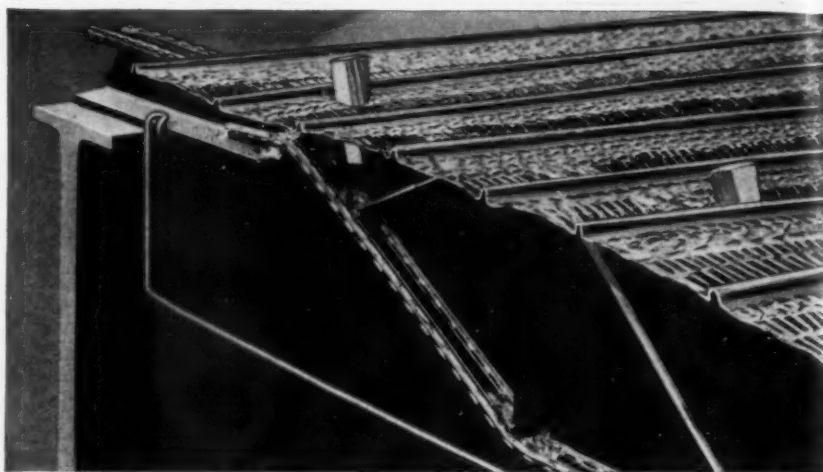
$\frac{3}{4}$ " Stay-Rib No. 3 may be curved to any radius of 12 inches or over. The curved sheets, ribs to the outside, serve both as a form and as a reinforcement for the concrete.



Sheets may be curved at ends and flat in center, as shown here, or may be curved to a complete circle as shown below, for various purposes.



Altho $\frac{3}{4}$ " Stay-Rib No. 3 was designed particularly for concrete slab construction for floors and roofs, there are many other uses to which it is adaptable, as outlined in the Bulletin shown below. Send for a copy and keep it for reference.



Fewer Ribs—More Mesh

BACKED by broad experience with reinforced concrete guided by results of exhaustive tests and observations of jobs, and aided by the basic advantages Stay-Rib metal lath design Milcor engineers perfected this new reinforcing rib lath— $\frac{3}{4}$ -inch Stay-Rib No. 3.

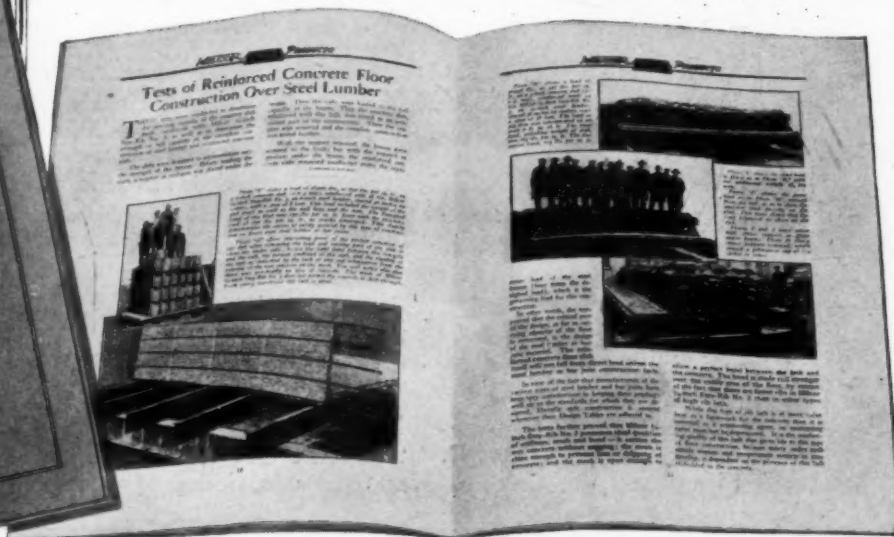
An examination of the lath itself will impress you with these and other important points of superiority: 1. Fewer solid ribs therefore more metal mesh for concrete to permanently grip. 2. No loss of wet concrete from drip-page because of Stay-Rib mesh design. 3. Superior stiffness maximum safety before and after pouring. 4. Safe handling no jagged points speedier work. 5. Standardized, dependable quality.

Estimating Service Free. Prompt Deliveries From Stock.

MILWAUKEE CORRUGATING CO., Milwaukee, Wis.
CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS. BOSTON, MASS.

MILCOR

REINFORCING RIB LATH



Send for this Bulletin Describing Comparative Tests.



TEA KIOSK, NEW ZEALAND

This floor in the club house of the Ellerise Racing Club, Auckland, N. Z., has a Colormix floor in Brown, Black, and Grey. Colormix has introduced better, more attractive concrete floors in many foreign lands.

RESULTS

*Y*OU specify Ways and Means
—but you are after RESULTS.

When someone offers you a just-as-good-but-cheaper method of producing colored hardened concrete floors, find out if its RESULTS are just-as-good.

Colormix created the successful colored concrete floor.

DYCROME

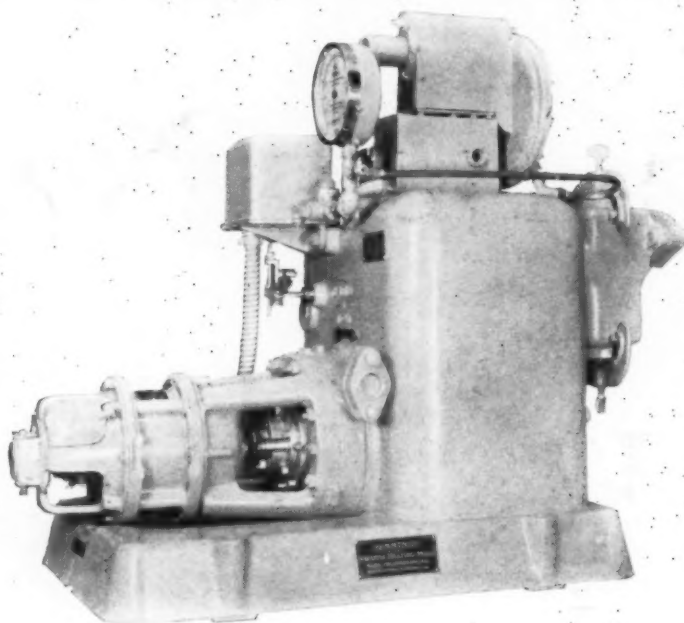
through chemical reaction with the cement colors and hardens floors already installed. Send for particulars.

THE MASTER BUILDERS COMPANY

Sales Offices • Cleveland, Ohio • Factories at Cleveland and Irvington, N. J.
In One Hundred Cities

COLORMIX FLOORS

COLORED HARDENED CONCRETE



A heating pump for your small jobs

By installing the Type T Jennings Vacuum Pump, you can give your small heating jobs—jobs of less than 2,500 sq. ft. radiation—the same economies, the same flexibility and dependable satisfaction, as your big office building, apartment and hotel jobs on which the larger Jennings Pumps have been so universally used during the past seventeen years.

Note the benefits the Type T pump will give you:

1. Steam flow is steady. It is not impeded by obstructions in the system.
2. Each radiator receives its share of the heat—the one farthest from the boiler as well as the nearest radiator.
3. Less coal is consumed.
4. Piping is laid out as most convenient, for example, in existing conduits.
5. Boiler working pressures are lower.
6. Furnace firing is easier and less frequent.
7. No noisy water hammer.
8. Heat supplied is closely controlled according to weather conditions.

Advantages which assure better, more economical performance, *thorough satisfaction!*

NASH ENGINEERING COMPANY

12 WILSON ROAD



SO. NORWALK, CONN.

Jennings Pumps

RETURN LINE AND AIR LINE VACUUM PUMPS

CONDENSATION AND CIRCULATING

PUMPS

America Needs More Garages in Her Cities~

This very important opportunity for the creation of architectural commissions should engage the attention of architects in every city of over 25,000 population. In the recent past over 100 modern, multi-floor buildings have been erected. That they are exceptionally profitable is a matter of record. To aid you in formulating ideas on this subject we urge you to read "Planning Garages for Profitable Operation." It will be sent, gratis, on request. Ask for the latest "F" edition.



RAMP BUILDINGS CORPORATION

21 East 40th Street New York, N. Y.

GARAGE ENGINEERS
CONSULTANTS ON PROMOTION AND GARAGE MANAGEMENT



Holcomb Public School
Detroit, Michigan

Kindergarten Room



Where It Pays To Use High Grade Floors

It is not the first cost of floors, but the enormous cost of replacement and upkeep of low quality floors, that makes selective buying imperative for heavy-traffic uses.

In schools, where construction gets its stiffest tests, *Grauer-Watkins Red Asphalt* is being specified more and more widely.

Red Asphalt Endures For Decades

A richly beautiful floor, a fifty-year endurance floor, Grauer-Watkins Red Asphalt is "top-efficiency" for offices, public buildings, stores, schools, hospitals.

Let us put the Grauer Bulletins on your desk.

FLOORING
Red Asphalt
Acid Proof Asphalt
Rubber, Linoleum, Cork Tile
Mastic and Composition
Cement Floor Finish

Albert Grauer & Co.
1408-17th ST. DETROIT, MICH.

DAY-LIGHTING
Sidewalk Lights
Sky Lights
Floor Lights



[[The Philadelphia Warehouse of the
Atlantic & Pacific Tea Company—
heated by Heggie-Simplex equipment]]

Choice of Careful Corporations—

WHERE heating must be even, sure and economical—in the office buildings, warehouses and plants of leading corporations all over the country—you find Heggie-Simplex electric-welded steel heating boilers in steadily increasing numbers. The most modern of heating equipment—making certain the most satisfactory service at the lowest final cost.

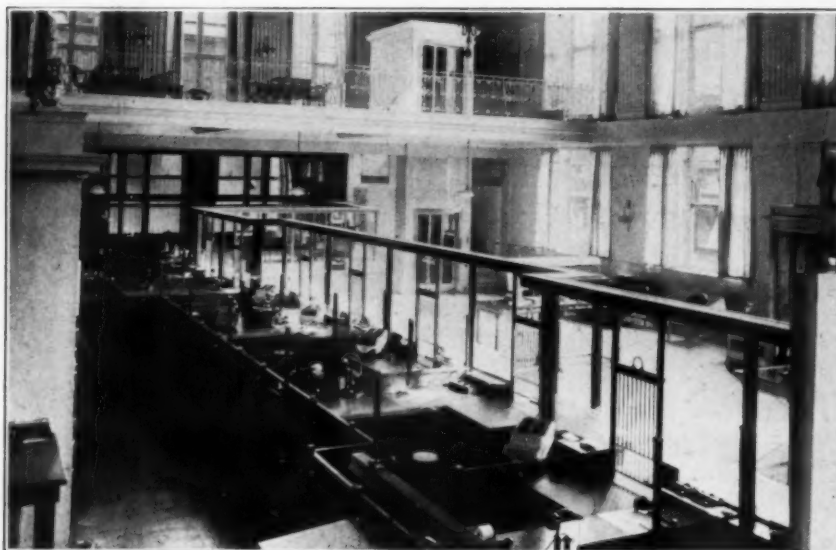
*Heggie-Simplex Boiler Co., Joliet, Illinois. Representatives in principal cities
— telephone and address listed under "Heggie-Simplex Boiler Company."*

HEGGIE-SIMPLEX

ELECTRIC-WELDED STEEL HEATING BOILERS



THE NEW RENAISSANCE IN METAL WORKING



The Low Cage Partitions, of metal and plate glass, Bookkeepers' Desks, Wickets and Counters, in the Bank of Charleroi and Trust Co., Charleroi, Pa., give an idea of the diversity of Art Metal equipment for bank interiors.

This massive and beautiful main entrance door of the same Charleroi bank is a fine example of Art Metal craftsmanship. No delicacy of proportion has been sacrificed in its heavy cast bronze construction. Hopkins and Dentz, New York City, Architects.

TRANSLATING YOUR BLUEPRINTS INTO LIVING METAL

Art Metal master craftsmen bring out all the beauty of your design

TO give your design concrete expression calls for high artistry. This, Art Metal does with arresting beauty—beauty inspired by the old master metal workers. Such craftsmanship overlooks no detail. The exact effect you planned is produced without the minutest variation.

For over thirty-eight years Art Metal has been working with this ideal—careful skill speeded on the wings of modern production. The result is metal equipment that gratifies the eye while conforming to the requirements of everyday work.

This is especially valuable to the architect of



The dignified beauty of this vault screen in the Bank of Charleroi and Trust Co., is the result of practical application of the architect's design in imperishable bronze.

banks and public buildings. His design takes practical form in living metal. And Art Metal equipment, in bronze and steel, can fill the most diversified specifications.

To Art Metal, every job is an individual problem. Art Metal service stands ready to co-operate with you in every way—to execute your conception with beauty and economy. A letter will bring an experienced representative. This places you under no obligation. Write NOW.

Art Metal

JAMESTOWN - NEW YORK

BRONZE AND STEEL INTERIOR EQUIPMENT FOR BANKS, LIBRARIES AND PUBLIC BUILDINGS... HOLLOW METAL DOORS AND TRIM



Zouri

features your client's merchandise

From a profitable standpoint alone, you may recommend Zouri Key-Set Sash and Store Front construction. You have minimum worry over possible installation "accidents"—your client, thanks to the famous Zouri distribution of setting pressure along a patented gutter, will find next to no distortion of the window frame, thereby assuring him safety from breakage due to wind, shock or setting.

Years of service under all sorts of adverse conditions, make Zouri the outstanding choice of those designers who build for permanence and beauty. Zouri store front installations—the above Los Angeles department store is typical—feature the merchandise inside, providing a dignified, lasting and safe frame for stocks on display.

Copper or bronze of unusually heavy gauge is used in the fabrication of Zouri sections—gauges that experience proves are necessary. After specifying, Architect and Contractor in considering substitutions should demand samples.

Our nation-wide corps of Zouri distributors—the largest in the field—is equipped to render intelligent cooperation from shop to skyscraper. Let them help YOU.



**Send for this
data book and helpful
detail sheets**

Written for the practical architect, builder and contractor, this material gives generous plans and diagrams for suggested methods of window and display space. Detailed drawings will prove helpful to specification writers. Valuable to keep on file. Send for your copy.

Zouri Drawn Metals Company

And Associated Companies:

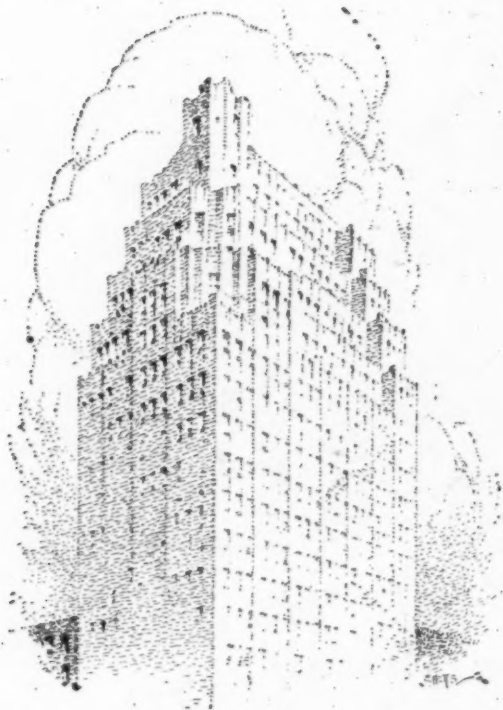
Distributors in
Principal Cities

INTERNATIONAL STORE FRONT COMPANY
STANDARD STORE FRONT CONSTRUCTION CO.
MODERN BRONZE STORE FRONT COMPANY
ZOURI COMPANY OF CALIFORNIA
ZOURI DRAWN METALS CO. OF NEW YORK, INC.

Names
on Request

Factory and General Offices: Chicago Heights, Illinois

* T E C H N I Q U E S *



Fine Line Technique

THE above pen and ink drawing, extremely light in feeling, is a direct opposite to the thick-lined, heavily shadowed type of technique seen so frequently and illustrated in this series of advertisements but a short time ago. It represents still another variation of the ever-interesting Black-and-White handling which Higgins' American India Ink makes possible.

Such light treatment—such delicacy—owes its effect partly to the thinness of the lines, whether they be in long, sweeping strokes, short ones or cross hatch—and partly to the white space or board intervening between the lines. The subject above has been especially selected to give this light, airy feeling.

Detail may also be included if the requirements dictate and if it is not too heavy, though this treatment serves better when imaginative areas are to be created.

Equally effective for this delicate technique are Higgins' General (Soluble) and Higgins' Waterproof Black Drawing Inks. You may obtain either as well as any of the 11 brilliant Higgins' Colored Drawing Inks at your regular supply dealer's.

"Techniques" an extensive new handbook just off the press, shows a number of exceptionally artistic treatments which are made possible through the use of Higgins' American Drawing Inks. Send for it.

CHAS. M. HIGGINS & CO.
271 Ninth St., Brooklyn, N. Y.



HIGGINS'

Drawing Ink

Beaver's increasing popularity a tribute to quality

The ever-increasing recognition of Beaver American Plaster is an unmistakable tribute to its unvarying good quality.

Each year, for many years, Beaver has been chosen by America's most discriminating architects and builders for their finest building operations.

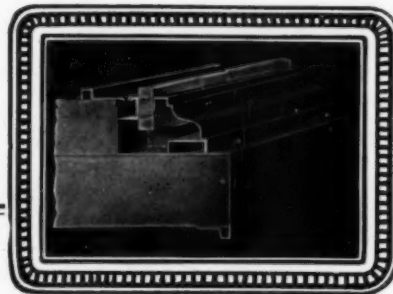
They choose Beaver chiefly perhaps because it never fails adequately to express the architect's artistic wall conceptions.

Those who have not experienced the satisfaction to be found in using Beaver American will be interested in new informative literature recently prepared.

THE BEAVER PRODUCTS CO., Inc.
Dept. 1811 Buffalo, N. Y.

BEAVER AMERICAN PLASTER

1812



Get These Samples for Examination

If you will compare Brasco patented features with other store front constructions, you will easily see why it offers the highest value—in strength, glass safety, ease and economy of installation, permanent beauty. Brasco covers every store front need at moderate cost—a complete, unified system used by the country's best architects and business concerns. Samples, catalogs, details free on request.

Brasco Manufacturing Company
5031 Wabash Ave., Chicago

Eastern Sales Office and Warehouse
28-14 Wilbur Ave., Long Island
City, N. Y.

Brasco

(COPPER STORE FRONTS)



WHEN Earl Horter made this delightful sketch of Castle Hill, Old Edinburgh, he used Dixon's Eldorado Pencil. He knew by years of experience that no pencil could equal the superb qualities of Dixon's Eldorado—"The master drawing pencil."

And Earl Horter is not alone in this preference. Leading artists, architects and draftsmen everywhere specify this famous American-made pencil for their work.

DIXON'S ELDORADO

"the master drawing pencil"

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 224-J, Jersey City, N. J.

SAMPLE OFFER—Write for full-length free samples of "The master drawing pencil" and of Dixon's Thin-Ex Colored Pencils. Because they have a thin colored lead of great strength and brilliance, Dixon's Thin-Ex Pencils are unequaled for thin line marking.



CONSUMERS POWER COMPANY BUILDING AT JACKSON, MICHIGAN

KOSMORTAR

THE beauty and restraint of classic lines mark the structures that house American business today. Architectural skill has eliminated waste space, bad lighting and egregious decoration. Modern buildings show efficient arrangement, tasteful design and cheerful interiors. They are more comfortable to work in, and more profitable to own.

Ever working towards the affinity of beauty, utility and permanence, it is not surprising to learn that architects like Kosmortar, and specify it in increasing quantity.

Kosmortar assures uniform mortar strength and quality. It is a manufactured product

and its ingredients are controlled scientifically. Only sand and water are needed to complete the mix. Kosmortar is plastic; spreads easily; does not drag; cuts clean at joints; is practically water-proof and rarely demands retempering. It saves time, saves labor, saves money. Specify Kosmortar. *The Ideal Cement for Masonry.*

KOSMOS PORTLAND CEMENT CO., Incorporated, Kosmosdale, Ky., Sales Offices, Louisville.

ALBERT KAHN, *Architect*, Detroit, Michigan, ROBERT LAKE CO., *Dealers*, Jackson, Michigan,
HENRY VANVERHORST, *Contractor*, Kalamazoo, Michigan.

THE IDEAL CEMENT FOR MASONRY





Embossed Inlaid Linoleum is obtainable only in Armstrong's. Above is Design No. 6042



Suggestive of the Early English

RICH, rugged ashlar is the motif for the artistry in this new Armstrong Floor. The color tone is not regularly repeated, but is freely blended to catch interest.

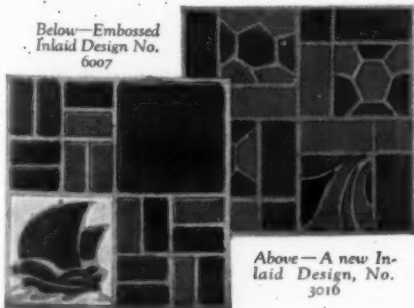
Moreover, the floor is embossed—the mortar lines are pressed below the surface, resulting in an actual texture never before achieved in linoleum.

This floor is comfortable to walk on, quiet, laid in a day, surprisingly low-priced. And it wears for years.

* This page is No. 4 of a series on Modern Floors. If you would like reprints of the entire series, or the assistance of our Bureau of Interior Decoration, address Armstrong Cork Company, Linoleum Division, 704 Virginia Avenue, Lancaster, Pennsylvania.

Look for the
CIRCLE A
trade-mark on
the back of each
tile.

Below—Embossed
Inlaid Design No.
6007



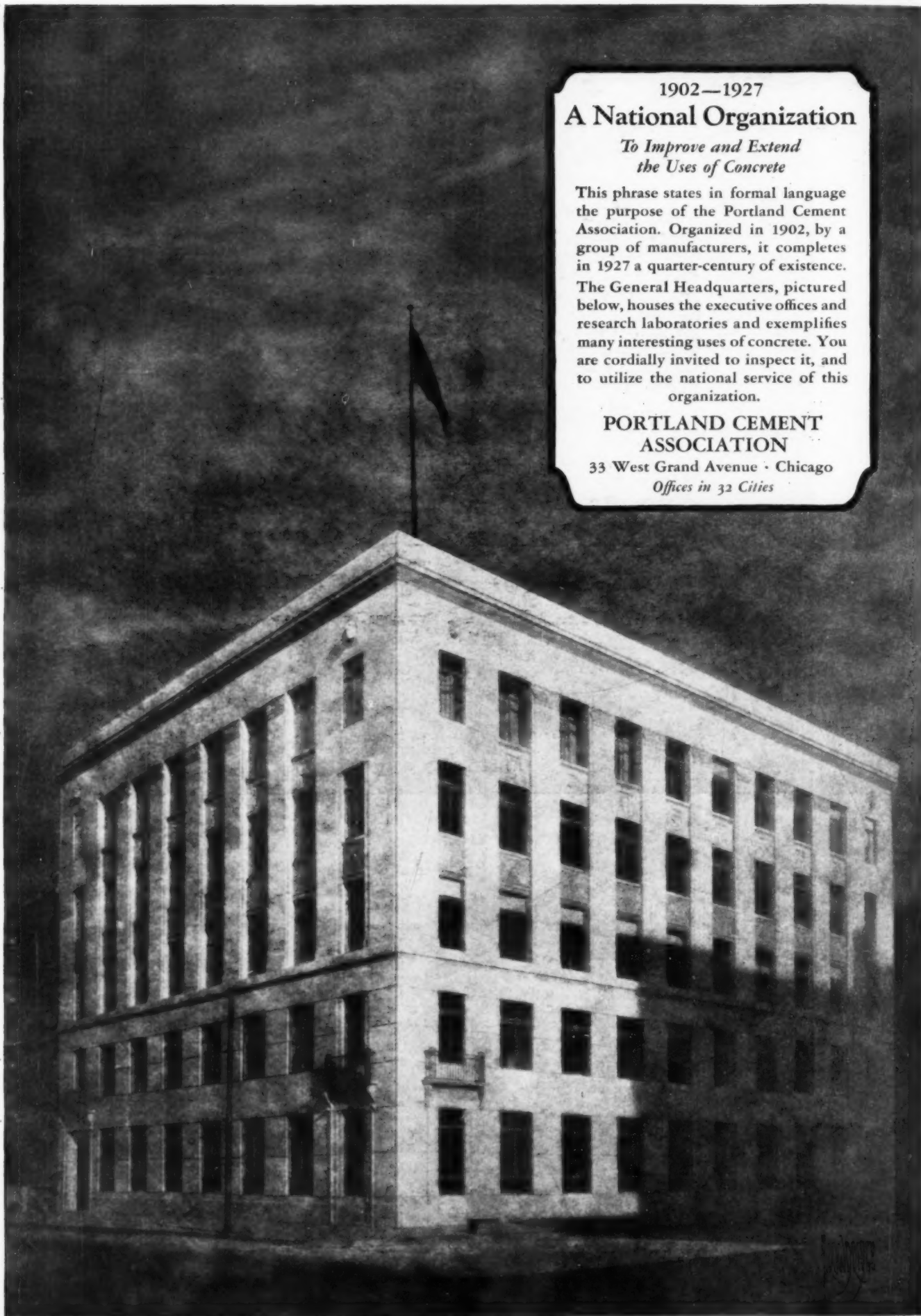
Above—A new In-
laid Design, No.
3016

Armstrong's Linoleum

for Every Floor in the House



PLAIN • INLAID • EMBOSSED • JASPE



1902—1927

A National Organization

*To Improve and Extend
the Uses of Concrete*

This phrase states in formal language the purpose of the Portland Cement Association. Organized in 1902, by a group of manufacturers, it completes in 1927 a quarter-century of existence.

The General Headquarters, pictured below, houses the executive offices and research laboratories and exemplifies many interesting uses of concrete. You are cordially invited to inspect it, and to utilize the national service of this organization.

PORTLAND CEMENT ASSOCIATION

33 West Grand Avenue • Chicago
Offices in 32 Cities

Detroit Receiving Hospital Selected Castle Sterilizers for Merit and Service



This large institution selected Castle equipment for its quality, and for the service this company renders.



The technique of Exact Sterilization, a non advertising treatise in 5 sections, is a valuable help in your surgery. Free on request.

One hospital telling another of this merit has resulted in the largest increase in sterilizer business ever recorded.

Competent advice will be given willingly on complete installation, re-arrangement or additions.

WILMOT CASTLE COMPANY

1209 University Ave.

ROCHESTER, NEW YORK

Sterilizers for Hospitals, Physicians, and Dentists

CASTLE

FOR FREE BOOKLETS ON STERILIZING TECHNIQUE — FILL AND MAIL TODAY

NAME.....ADDRESS.....

FOR JOB-DRY MATERIALS	BAGS OF CEMENT WATER-GALS. = BAG CU. YDS. = SAND CU. YDS. = STONE	7.60 5.94 .43 .27	CONCRETE	1.80 1.4 .37 1 1.30 1.4 .25	BAGS OF CEMENT CU. YDS. = SAND CU. YDS. = STONE	1:2:4 MIXTURE THICKNESS IN INCHES BAGS OF CEMENT CU. YDS. = SAND CU. YDS. = STONE	1:2½:5 MIXTURE
PROPORTION (MIX) FOR DAMP MATERIALS	BAGS OF CEMENT WATER-GALS. = BAG CU. YDS. = SAND CU. YDS. = STONE	7.60 4.34 .47 .34		QUANTITIES ABOVE ARE THOSE REQUIRED FOR:	100 SQ. FT. OF WALL OR FLOOR OF THICKNESS SHOWN		

CLEAN GRADED SAND AND STONE OR PEBBLES ¼" TO 2½" IN QUANTITIES AS GIVEN ABOVE ARE REQUIRED FOR:

ONE CU. YARD OF RAMMED CONCRETE

ONE BAG OF CEMENT = 1 CU. FOOT
ONE BAG OF CEMENT WEIGHS 94 LBS. NET
ONE BARREL OF CEMENT = 4 BAGS

PENN-DIXIE CEMENTS

FOR SERVICE-SAFETY

BUY AT
PENN-DIXIE SIGNS

WITH PROPER MIXING, CURING AND TEMPERATURE CONDITIONS, WATER AS SHOWN PER BAG OF CEMENT (AT LEFT) WILL GIVE UNIFORM STRENGTH. THE COMPRESSIVE STRENGTH OF SUCH CONCRETE AT 28 DAYS IS APPROXIMATELY 2800 LBS. FOR 6 BAGS, 1800 LBS. FOR 7½ BAGS, AND 1000 LBS. FOR 9 BAGS. OF WATER PER BAG. DECREASE WATER FOR STIFFER MIXTURES. DECREASE AGGREGATE FOR MORE WORKABLE MIX. REDUCED ADDING WATER KILLS STRENGTH. YOU CAN HAVE MONEY ON LARGE WORK BY DESIGNING MIX FOR MATERIALS TO BE USED. DATA ON THIS RULE ARE FOR AVERAGE CONDITIONS.

COPYRIGHTED 1927 BY PENN-DIXIE CO. CHICAGO, U.S.A.

Actual Size Reproduction of Concrete and Lumber Scale

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PENNSYLVANIA-DIXIE CEMENT CORPORATION

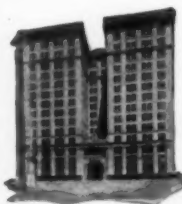
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This is one of the many buildings where Solway gives perfect satisfaction



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Builders: Geo. W.
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1. Lowers freezing point of the mix.
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Alkalies and Chemical Products
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SOLVAY

CALCIUM CHLORIDE



"GUNITE" STUCCO

at

Montauk Beach, Long Island, N. Y.

The use of "Gunite" Stucco on the walls of the workingmen's houses on the Carl Fisher Development at Montauk Beach, N.Y., Designed by Robert Tappan, Architect, insures permanent weatherproof and fire-resisting results.

"Gunite" Stucco can be used over any base. Architectural details are accentuated, economies are effected in first cost and maintenance cost reduced to a minimum. Any desired finish can be obtained.

The "Cement-Gun" is not restricted in use. It can be purchased and used by anyone.

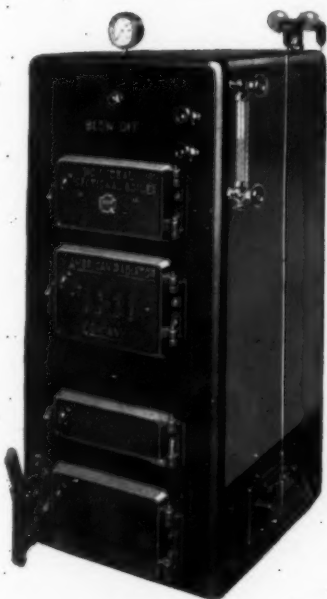
Our Contract Department will also estimate on stucco or other "Cement-Gun" work.

Full information will be sent on request.

CEMENT-GUN CO., Inc.
ALLENTOWN, PA.

Announcing

FIRST completely equipped
metal covered porcelain
enamel finished boiler
at Popular Prices!



The
New
IDEAL Sectional
BOILER

A New Day of Usefulness for the Cellar

OVER three billion dollars is invested in wasted cellar space, and over three hundred million dollars is being spent annually for cellar construction in American homes—and most of this space is wasted.

That is why we have developed the beautiful New Ideal Sectional Boiler. In addition to giving everything desired in heating, it is so clean and attractive that it allows the cellar to be converted into a truly useful, livable addition to the home.

The jacket of this boiler is in beautiful red enamel. Doors and plate work are finished in black porcelain enamel. The construction throughout is gas tight, insuring cleanliness of operation. The boiler is highly efficient, completely equipped in every respect, and is thoroughly and indestructibly insulated.

And, it costs no more than ordinary equipment.

Complete in Every Respect

1. Perfected Design—Highly Efficient.
2. Thoroughly and indestructibly insulated.
3. Completely equipped—*water and steam boilers*—with mechanical regulation and all accessories.
4. All doors porcelain enamel finish—Permanently beautiful.

AMERICAN RADIATOR COMPANY

AMERICAN RADIATOR COMPANY, 40 West 40th Street, New York City
Please send me complete information about the New Ideal Sectional Boiler.

7-2

Name _____

Address _____

In Buildings That Throughout

You Find—

TRADE MARK - REGISTERED

Compound

KEY - VENEERED
DOORS



State Bank of Chicago Building
Graham, Anderson, Probst
and White, Architects
Lanquist, General Contractor

In Chicago's new State Bank Building, every visible specification must meet two qualifications—beauty and durability. Outside, sturdy walls of quarried stone stand to delight the eye and defy the elements. Inside, Compound Doors perform a most important decorative function, and vie with the stone in lastingness.

For Compound Doors are built to last. Their choice sawn veneers are made part of the laminated soft wood core by tongue-and-groove construction. Doubled gluing surface, a high grade of moisture-proof glue, and the shearing resistance of key-veneering, greatly multiply their strength.

When you are looking for a door that can stand abnormal strain, remember that Compound's endurance has been proved through over 30 years of strenuous service.



Cross-sectional sample of Compound construction, showing 3/16 inch sawn veneer tongue-and-grooved to core.

Full information about either Compound Doors or Pyrono Doors sent on request. Their low cost will surprise you. Write.

**THE COMPOUND &
ST. JOSEPH**

AMERICA'S OLDEST VENEERED

Retain Their Beauty the Years

and—

Py-ro-no
TRADE MARK
REGISTERED

ASBESTOS-INTERLINED
DOORS

Where fire-proofing restrictions enter into the architect's problem of beautifying a building's interior, he must have a door that adds to long life and beauty an extraordinary degree of fire resistance. Pyrono Fireproof Doors have been chosen for this reason to stand in the new Equitable Trust Building, New York City.

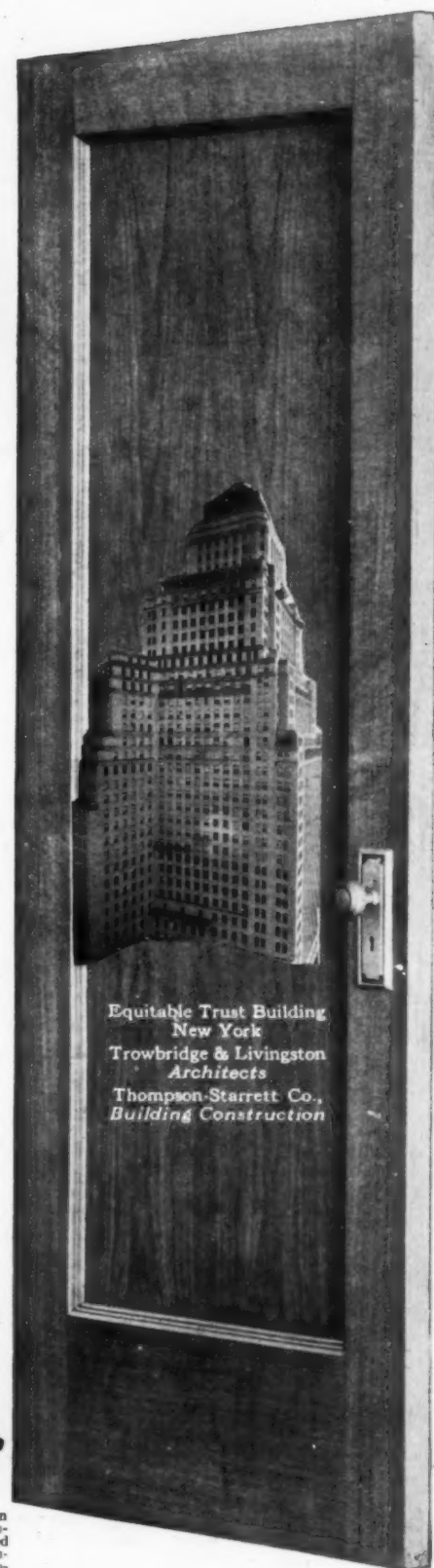
Pyrono Doors have all the advantages of real wood doors, without the drawbacks. They have the beauty of inimitable wood grains. They can be easily fitted. They have stamina that an inseparable bond of veneer and core gives to them.

Above all, Pyrono is a positive barrier to fire. The asbestos-sheathing that surrounds the core is impregnable. This has been proved not only under the intense heat of the blow-torch when tested an hour or more, but in actual fires, one lasting seven hours which left a Pyrono Fireproof Door unblistered on the side removed from the flames.



Pyrono construction magnified, the asbestos sheathing indented into core and cross-banded surface veneers applied over it.

PYRONO DOOR CO.
MICHIGAN



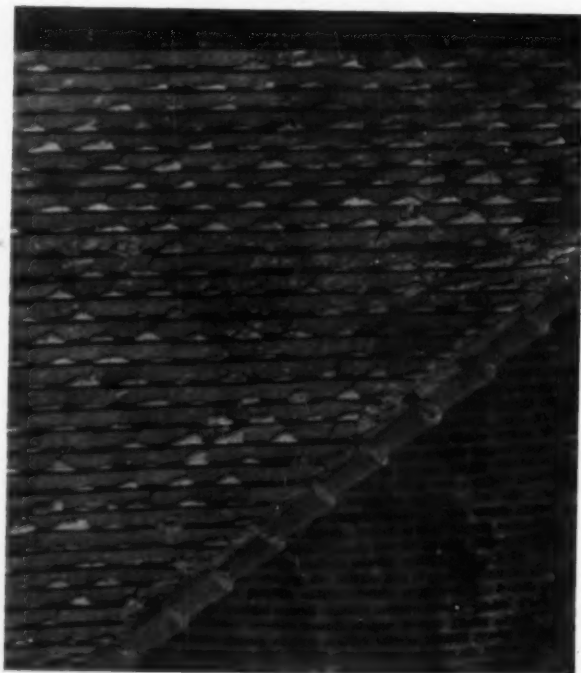
Equitable Trust Building
New York
Trowbridge & Livingston
Architects
Thompson-Starrett Co.,
Building Construction

D O O R S P E C I A L I S T S



Country Home—Harry F. Guggenheim, Port Washington, L. I.

Polhemus & Coffin, Architects, Frederick Sterner, Associated



Roofed with
Heinz French Flat Tiles
 Hand-Faced—Graduated Colors

Heinz Special Shapes

Plymouth—Old English Shingle.
Venezian—Italian Tapered Mission.
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Zoar—Long, Hand-Fluted Dutch.
Derby—Cut Face-French Flat.

The Heinz Roofing Tile Company

Manufacturers of Terra Cotta Roofing Tiles

Denver, Colorado

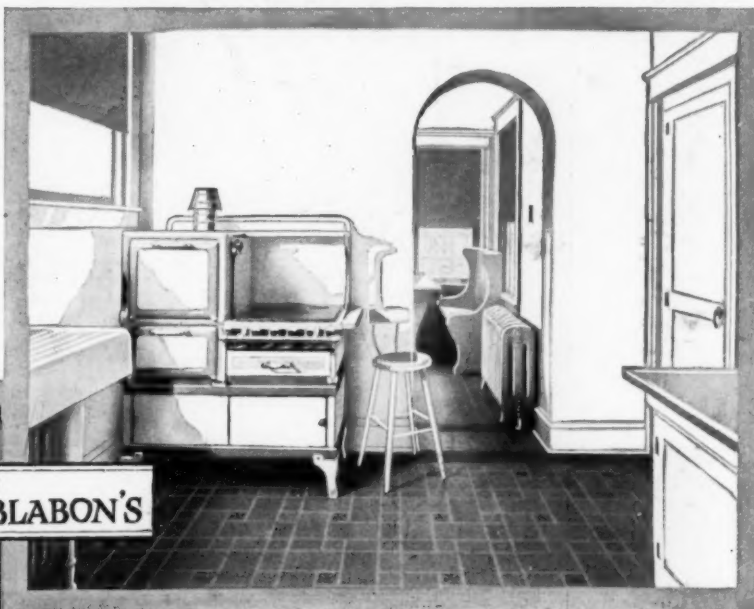
Eastern Office—101 Park Ave., New York
 Phone: Caledonia 0809



If you plan homes with floors women like—there's no doubt they will have a readier sale. For women you know, with their preferences even for seeming details, are often the deciding factor in buying a home.

The colorful patterns of Blabon's Inlaid Linoleum always take their eye. And when they realize that a Blabon floor lasts a lifetime and is easy to keep clean—that's the floor they want.

The 1928 patterns in Blabon floors are particularly alluring. You will find wonderful decorative possibilities in the exclusive Blabon reproductions of Jagged



In this kitchen, pantry and breakfast room is a Blabon floor of Inlaid Linoleum, pattern 104, with Plain Blue Linoleum border.



The Blabon floor of Inlaid Linoleum, pattern 1115, with Plain Black Linoleum border, gives a smart appearance to this sun porch.



Look for this label on the face of all Blabon's Linoleum.

Stone, irregular and rectangular Slatestone and Flagstone, Marble Tiles with Grecian decorative motifs, and other patterns appropriate for every room upstairs and down.

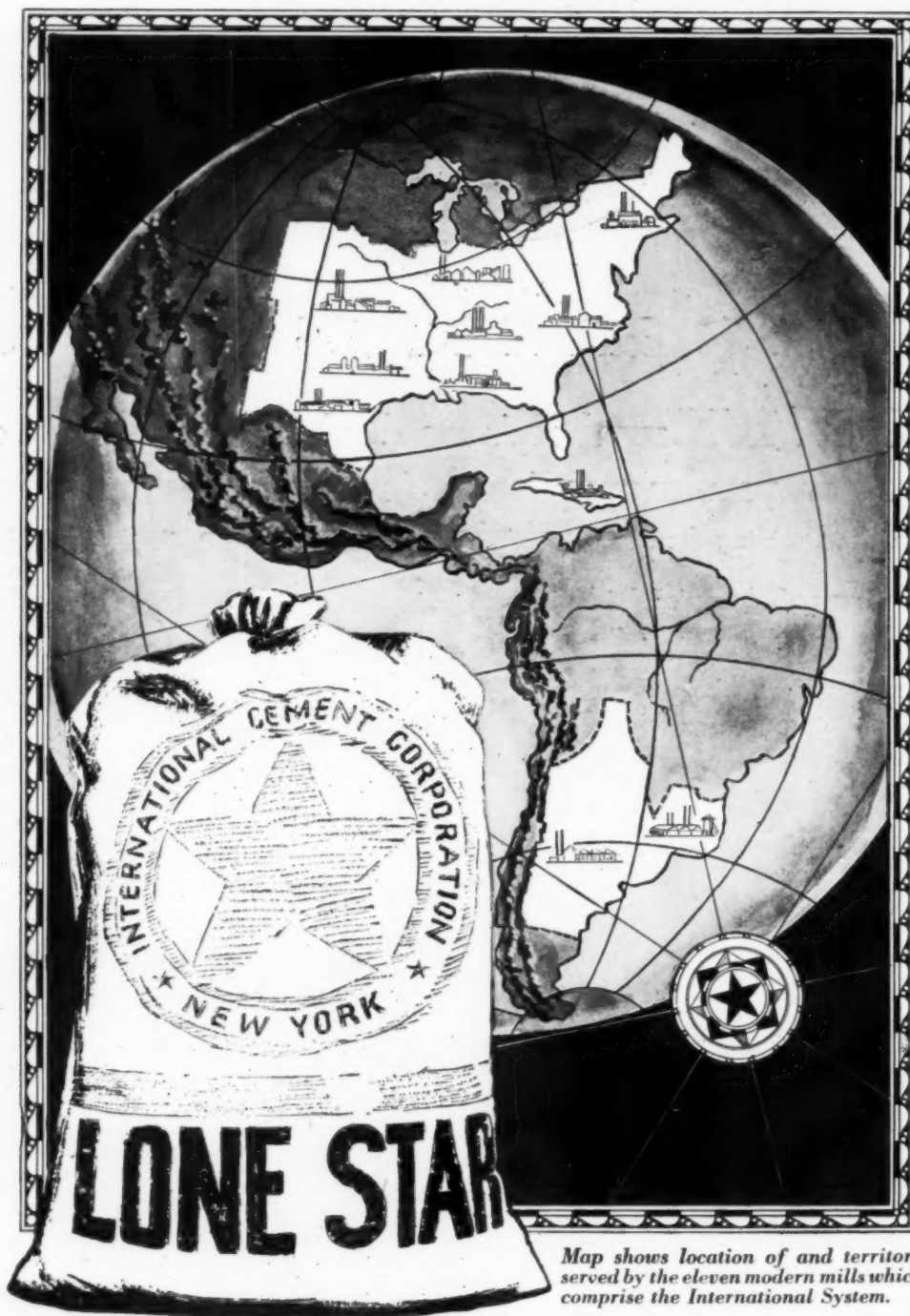
Our Advisory Bureau of Interior Decoration will gladly cooperate with you. No charge for the service.

You are cordially invited to consult our Service Bureau for Architects and Contractors regarding any flooring problems. A reprint from Sweet's Architectural Catalog, a Blabon Pocket Size Pattern Book, and a box of quality samples will be sent upon request.

The George W. Blabon Co., Nicetown, Philadelphia
Established 76 years

It's worth while insisting on
BLABON'S
the Linoleum of enduring beauty

© The G. W. B. Co.



Map shows location of and territory served by the eleven modern mills which comprise the International System.

LONE STAR Cement is made by the International Wet-Blending Process. Under this process, fifty million gallons of water are evaporated daily in the mills of the International System. So thoroughly are the ingredients mixed that Lone Star Cement is identical in quality not only mill for mill and bag for bag, but literally pound for pound.

INTERNATIONAL CEMENT CORPORATION, New York

One of the world's largest cement producers — 11 mills, annual capacity 14,700,000 barrels.

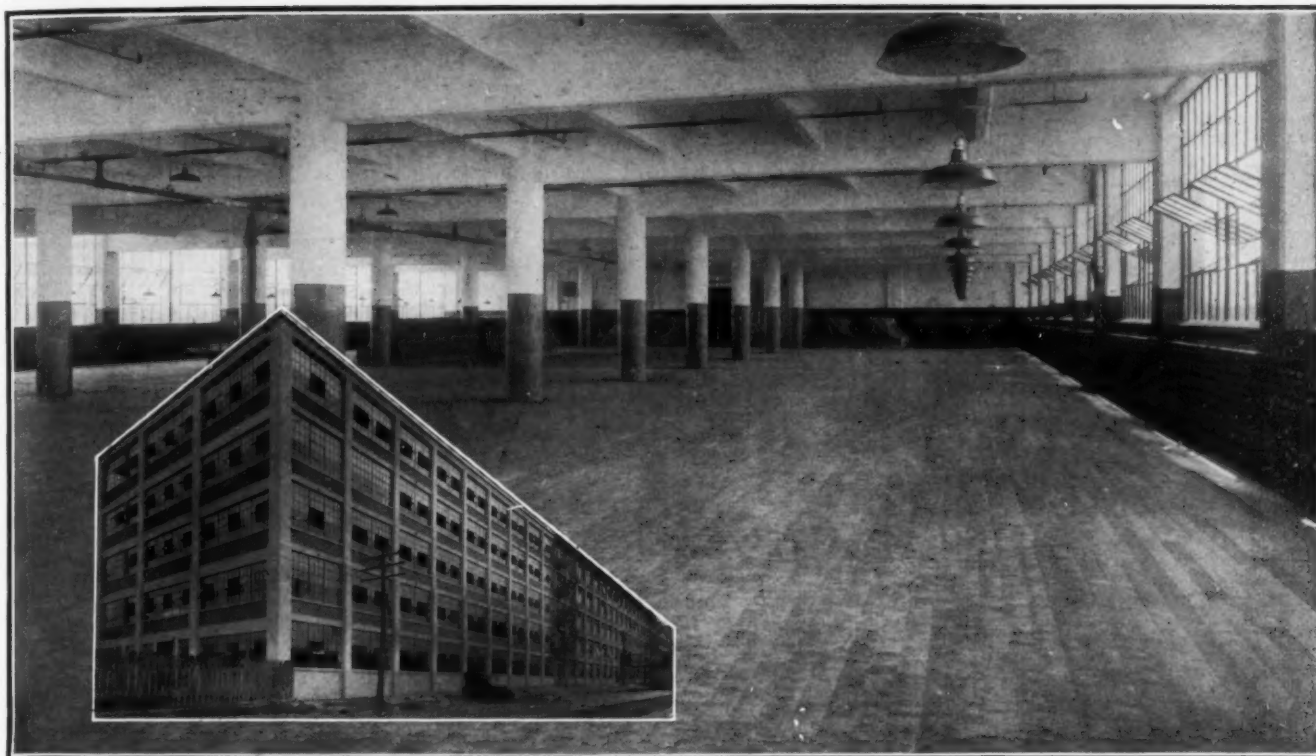
These ten subsidiary companies operate the eleven mills which comprise the International System:

ALABAMA PORTLAND CEMENT COMPANY
 ARGENTINE PORTLAND CEMENT COMPANY
 THE CUBAN PORTLAND CEMENT CORPORATION
 INDIANA PORTLAND CEMENT COMPANY
 THE KANSAS PORTLAND CEMENT COMPANY

Birmingham, Ala.
 Buenos Aires, Argentine
 Havana, Cuba
 Indianapolis, Ind.
 Kansas City, Mo.

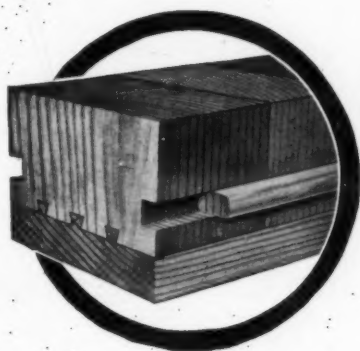
KNICKERBOCKER PORTLAND CEMENT CO., Inc.
 LOUISIANA PORTLAND CEMENT COMPANY
 TEXAS PORTLAND CEMENT COMPANY
 URUGUAY PORTLAND CEMENT COMPANY
 VIRGINIA PORTLAND CEMENT CORPORATION

Albany, N. Y.
 New Orleans, La.
 Dallas and Houston, Tex.
 Montevideo, Uruguay
 Norfolk, Va.



Geo. Steck & Company Piano Factory, Boston. Aberthaw Company, Engineers-Builders

The 4th famous piano-maker to install Bloxonend



Bloxonend is furnished in 8 ft. flooring lengths. The tough end grain forms the wearing surface.

George Steck & Co.—makers of quality pianos for 70 years—has joined the ranks of Bloxonend users along with STEINWAY, WEBER and BRAMBACH. Three entire floors of the huge new factory addition at Boston (shown above) are equipped with BLOXONEND.

It is significant that BLOXONEND is preferred by the leaders in practically every industry where floors are exposed to hard wear. Leaders in Meat Packing, Baking, Printing and Publishing, Textile, Railroad, Iron and Steel, and Automotive Industries use BLOXONEND because it reduces maintenance and operating costs. Also ideal for school gyms and shops.

BLOXONEND'S durability, resiliency, cleanliness and ability to stay smooth will appeal to your clients.

Sample and Specifications on request

CARTER BLOXONEND FLOORING COMPANY

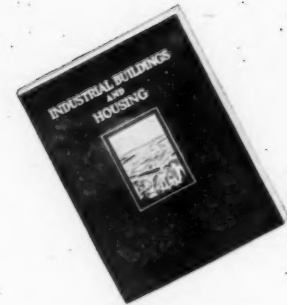
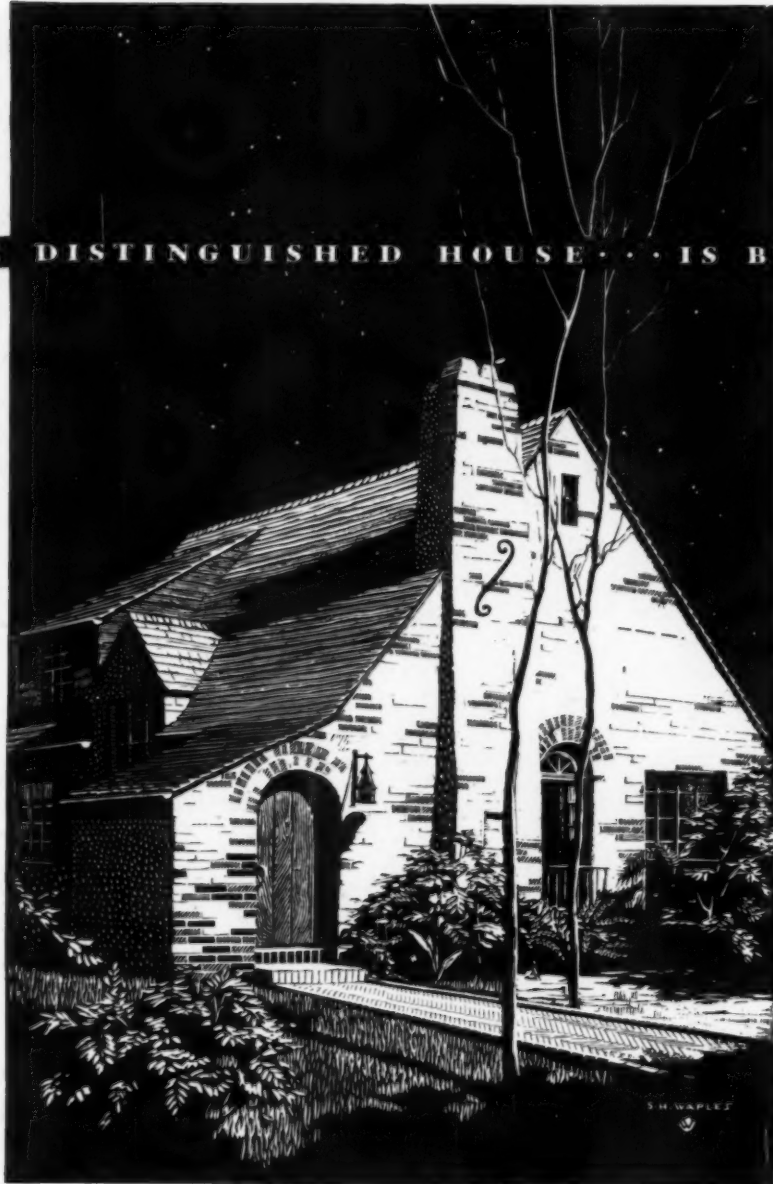
Kansas City, Missouri

Branch Offices in Principal Cities—See Sweet's

BLOXONEND
Lays Smooth **FLOORING** *Stays Smooth*



THE DISTINGUISHED HOUSE . . . IS BUILT OF FACE BRICK



*Industrial Buildings
and Housing*

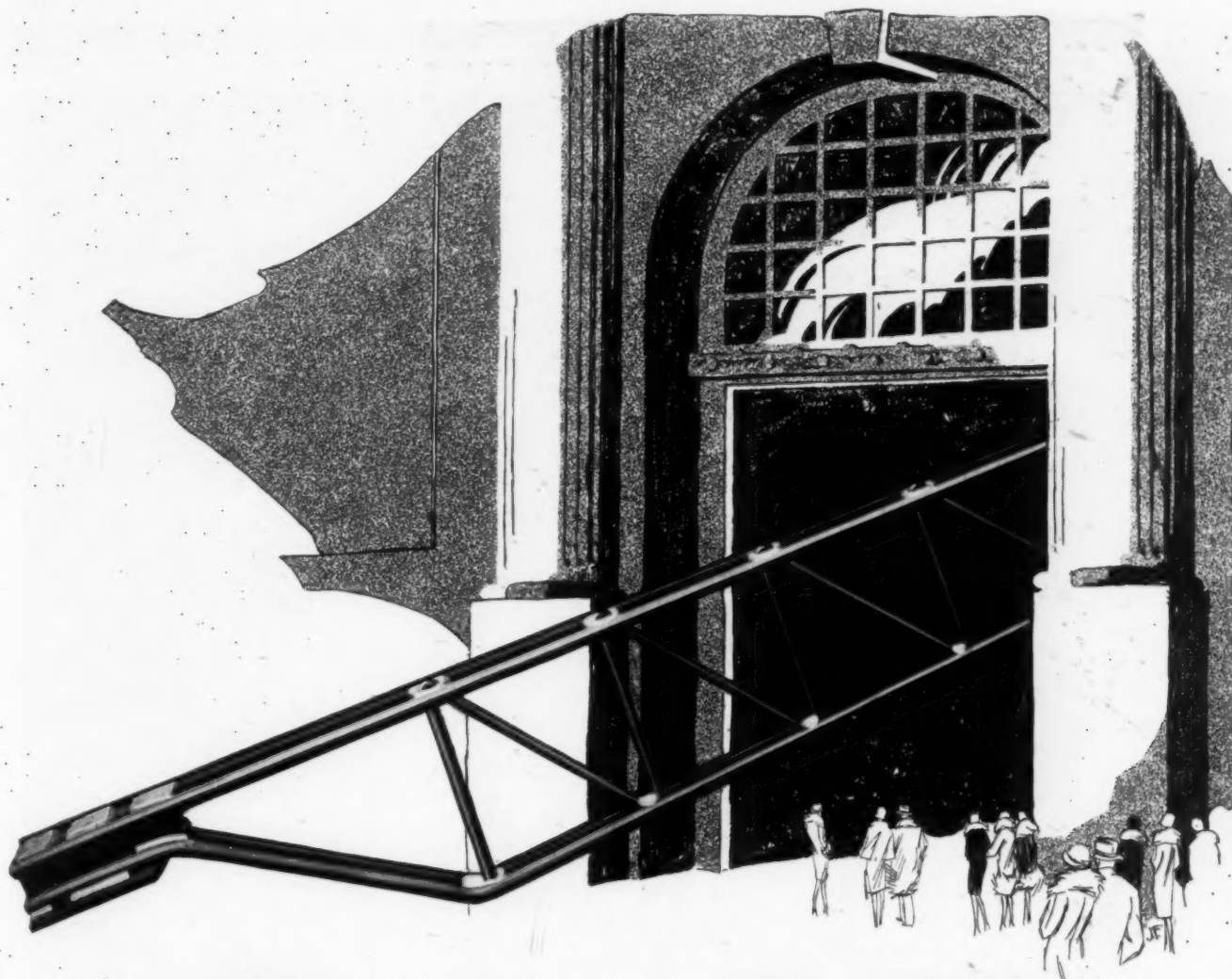
A reference book containing a generous fund of practical information concerning the planning and construction of the modern manufacturers' buildings and employees' communities. Profusely illustrated and well bound. Mailed postpaid to architects for two dollars.

AMERICAN FACE BRICK ASS'N.
1751 Peoples Life Building
Chicago, Illinois

Like the canvases of the immortal Whistler, the beauty of many an architectural masterpiece is fast fading into a dull monochrome because the colors of the materials are not permanent. Far-seeing architects are averting such catastrophies by employing only materials which require no paint and whose beauty can never, never fade—

F A C E B R I C K

—requires no paint or whitewash



The Ingalls Truss

For Fireproof Floors *and* Roofs

The Ingalls Positive Anchored Truss is designed in strict accordance with conservative engineering practice. Each member is so proportioned that no overstress exists under the rated capacity. The anchorage to walls, concrete or steel beams is efficient and simple.

Ingalls Truss Floors are more soundproof, of light dead weight and economical. Further economy is obtained by the possible reduction in size of the supporting structural members.

Erection proceeds more rapidly and easily regardless of temperature without the need of skilled labor or special heavy equipment.

Ample space is available for all piping and additional savings are secured by the reduction in cost of piping installation.

The Ingalls Trusses were designed primarily to build better buildings by a simpler and more positive method and to do this at less cost.

Let us send you engineering data, details and complete specifications. You will find them helpful in solving your structural problems.

For
Schools
Churches
Office
Buildings
Theatres
Apartments
Homes
Etc.

A few high-grade representatives are desired for definite territory.

The Ingalls Steel Products Co.

MAIN OFFICE AND PLANTS, BIRMINGHAM, ALA.

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Tampa, Fla.
1004 Tampa Theatre Bldg.

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1021 Seybold Bldg.

Information

Samples

Illustrations

Sheldon's Slates
come in
a Variety of Natural Textures
and (exclusive) Color Effects
insuring always
a Distinctive Combination
that endows
Every Kind and Type of Building
with
"The Beauty of Appropriateness"

Flooring

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F. C. SHELDON SLATE COMPANY

General Offices, Granville, N. Y.

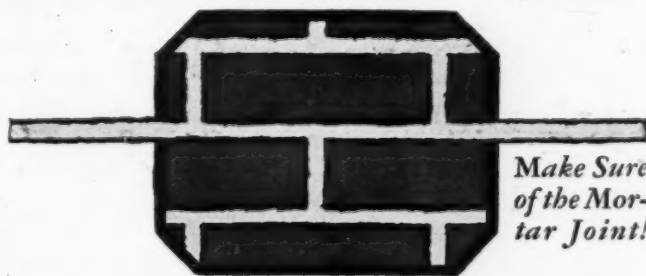
St. Paul, Minn.
364 Rice St.Chicago
228 N. La Salle St.New York City
101 Park Ave., Room 514Cincinnati, O.
35 Poinciana Apt.Detroit, Mich.
115 Francis Palms Bldg.Columbia, S. C.
17 Carolina Bank Bldg.



for winter masonry!

BRIXMENT mortar can be used successfully in the severest weather by heating the sand and water which causes the mixture to set before freezing can occur. Further protection is given by the oily content of BRIXMENT itself which reduces the freezing point of the mortar. Send for architect's handbook. Louisville Cement Co., Incorporated; General Offices: Louisville, Kentucky.

MILLS: BRIXMENT, NEW YORK, and SPEED, INDIANA



*Make Sure
of the Mor-
tar Joint!*

Use
BRIXMENT
for  *Mortar*



An Odd Roof Effect attained by laying IMPERIAL Spanish Tiles in slightly curving lines

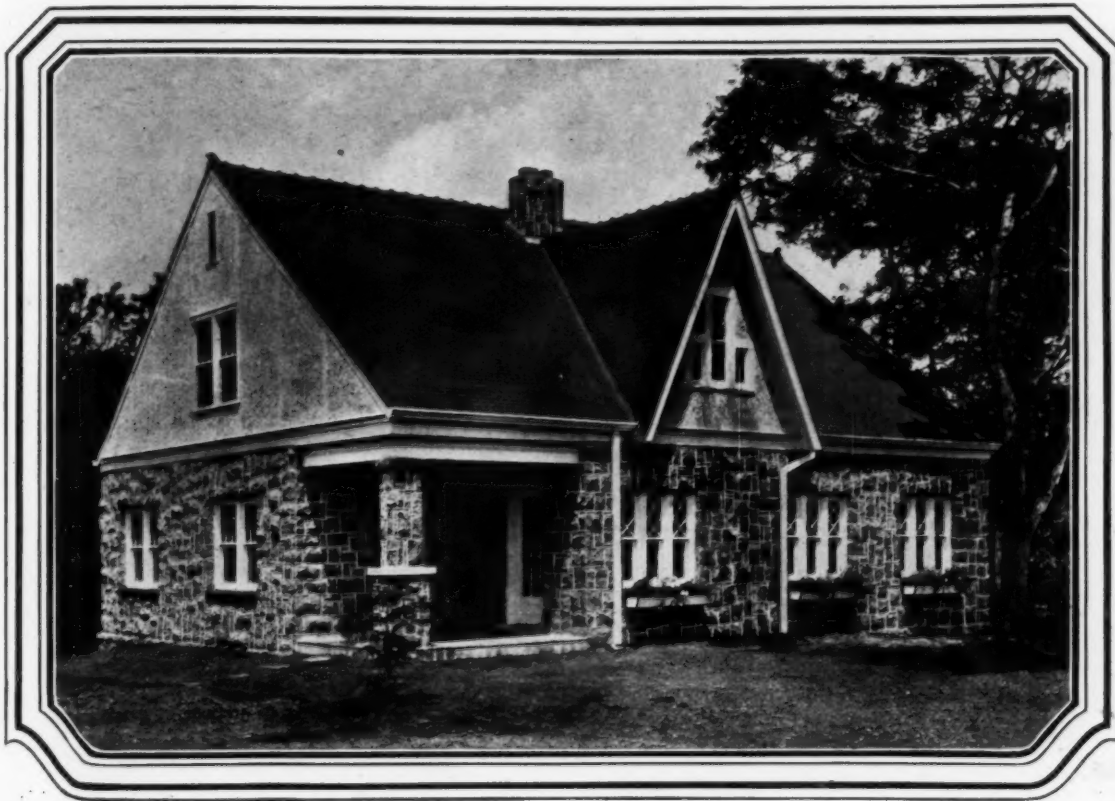
This is but one of many unusual roof treatments which can be achieved with IMPERIAL Roofing Tiles. Because of the variety of ways in which they may be laid, and the countless color effects obtainable with them, they give the architect a greater opportunity for self-expression than does any other roofing material.

Moreover, by employing them the architect can rest assured that he has given his client the most enduring roof it is possible to specify. Long after roofs of less permanent materials have required replacement, a roof of IMPERIAL Roofing Tiles will be warding off weather quite as efficiently as it did when it was new.

LUDOWICI - CELADON COMPANY
Chicago, 104 S. Michigan Ave. New York, 565 Fifth Ave.

IMPERIAL
Roofing Tiles

WRITE for free folder
containing color re-
productions of IMPERIAL
Roofing Tiles and resi-
dences roofed with them



Residence of A. C. McCullough, Nashville, Tenn. Architect and Builder, A. C. McCullough.
Masonite used for attic insulation and as interior finish throughout second floor.

Regardless of whether the home is to be built of stone, wood, stucco or brick, Masonite Structural Insulation is a sound investment.

This *thermostatic* wood is superior for *insulation*, *strength* and *acoustics*

Masonite, the thermostatic wood, not only assures permanent insulation against heat and cold, but it makes an excellent sound deadener and an ideal plaster base. It also provides good, strong sheathing. Exhaustive tests by Robert W. Hunt, Riverbank Laboratories and Armour Institute prove the superiority of Masonite—for heat insulation, for strength and for acoustics. If you will mail attached coupon, we will gladly send reports of these tests.

MASON FIBRE COMPANY

111 W. Washington Street, Chicago, Ill.

Mills: Laurel, Mississippi

Masonite

MANUFACTURED LUMBER FOR

STRUCTURAL INSULATION

© M. F. Co. 1927

Send Coupon!

MASON FIBRE COMPANY

Dept. 612A, 111 W. Washington St.
Chicago, Ill.

Please send me reports of tests showing
superiority of Masonite.

Name.....

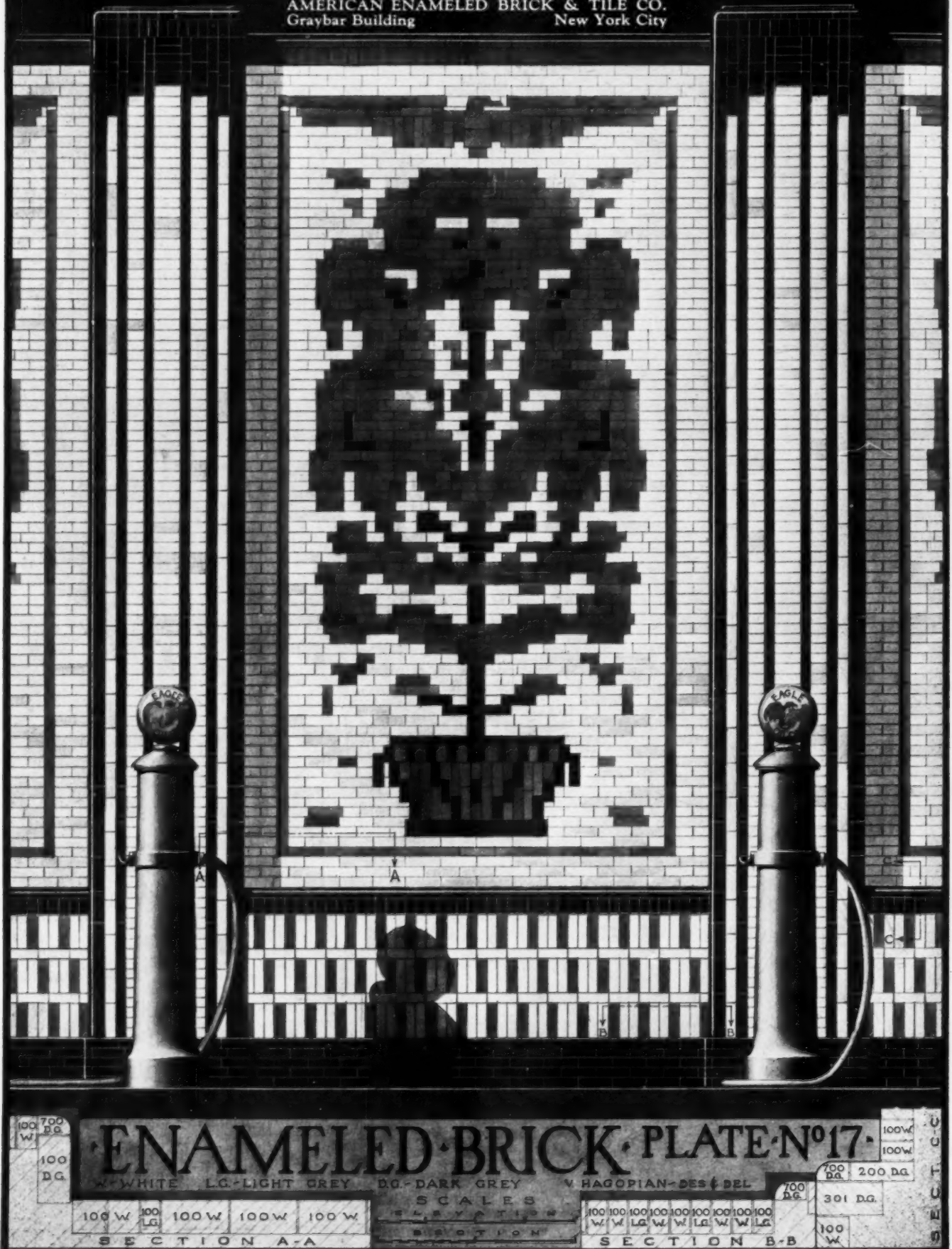
Street.....

City.....

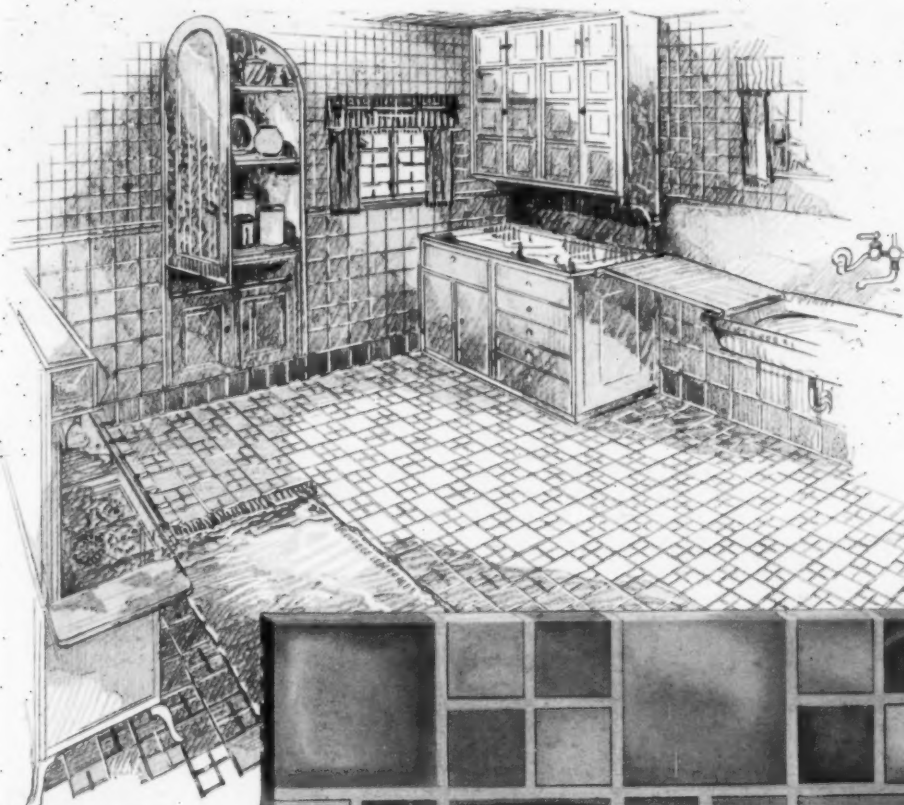
State.....

THIS plate with Plate 16 suggests the advertising possibilities that lie in the ornamental treatment of enameled brick. The color possibilities range beyond our stock whites, greys and blacks into the more vivid colors. Slight irregularity in color, as indicated, is possible.

AMERICAN ENAMELED BRICK & TILE CO.
Graybar Building New York City



Copies of these plates in folio will be mailed upon request



THE feeling of beauty and satisfaction obtained from a bright, cheery kitchen with Romany Rainbow Tiles on its floor, walls and ceiling is still further enhanced by its extreme cleanliness, durability and economy.

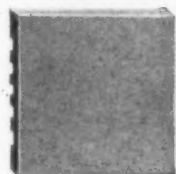
Member, Associated Tile Manufacturers

UNITED STATES QUARRY TILE COMPANY
Parkersburg, West Virginia

ROMANY QUARRY TILES
are an American Product



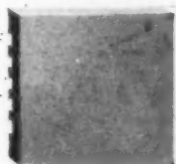
Romany Red



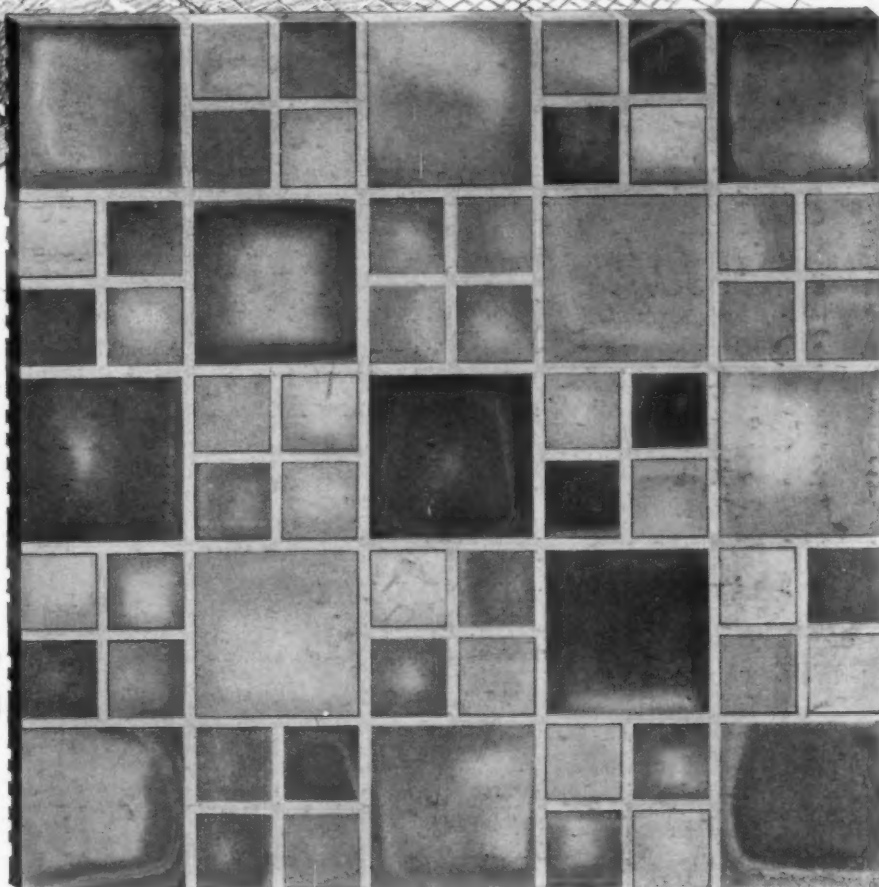
Romany Grey



Romany Brown



Romany Rainbow



Field Pattern No. 1529

These are Romany Rainbow Tiles reproduced from the original. The colors in any shipment range from russett, through the tans to a delicate green, and when laid present a medley of golden shades.

ROMANY QUARRY ■ TILES

At Your Service—

These District Association Offices and
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Raleigh, N. C. 508 Commercial National Bank Bldg.
Salt Lake City 301 Atlas Bldg.
Seattle, Wash. 913 Arctic Bldg.

What skintling does to a Common Brick Wall



Write for "Homes of Lasting Charm," an interesting book of 120 practical small homes, actually built and lived in by satisfied owners. It includes floor plans and suggestions for beautifying garden and grounds.

- ☐ "Homes of Lasting Charm"—25c
 - ☐ "Skintled Brickwork"—15c
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- Check above books wanted or send
\$1.25 for all of these books.



SKINTLING adds a convincing touch of variety and interest to the dignity which is the inevitable heritage of a common brick wall. The flexibility of common brick, pliant in the architect's hands, is nowhere more conclusively demonstrated than in the many forms of skintling, which vary the surface effect, without increasing the cost. The broad expanse of the wall is relieved by shadows cast by projecting and irregularly placed individual bricks. It is an opportunity to achieve artistic values in the designing of the most modest dwellings.



Easy to lay: There is nothing difficult or complicated about the laying of skintled brickwork. A good mechanic can lay it, without previous experience, if he uses a little care in placing the first few courses. Based upon actual production, skintled laying has been found to be cheaper than the more conventional laying. This, with the saving due to the low cost of common brick, effects a real economy. *For beauty and economy, build with common brick.*

COMMON BRICK MANUFACTURERS' ASSOCIATION of AMERICA
2134 Guarantee Title Building, Cleveland, Ohio

BRICK forever—

PREFERRED BY ARCHITECTS



Architect
GORDON ALLEN

Educational institutions exhibiting the widest variety of architectural styles are to be found among the construction work of Stone & Webster, Inc. This page illustrates the Beaver Country Day School, near Boston, in which the architect has contrived to give a group of new buildings the effect of long seasoning by wind and weather.

STONE & WEBSTER

INCORPORATED

BUILDERS

BOSTON, 49 Federal Street
NEW YORK, 120 Broadway
CHICAGO, First National Bank Bldg.

PITTSBURGH, Union Trust Bldg.
SAN FRANCISCO, Holbrook Bldg.
PHILADELPHIA, Real Estate Trust Bldg.

IT'S ★ SOUNDPROOFT

Rugs furniture draperies and Banner LIME absorb SOUND!



The Hammer Test

Tap a patented plaster wall. It rings. And then echoes. Tap a Banner three-coat wall. You hear a muffled thud. The Banner wall deadens sound, through its myriad of uncommunicative, tiny air spaces which are part of its composition. No echoes here, no reverberations. It's the inherent quality of Banner Lime.

WHAT stops echoes within a room? What softens noise?

Rugs, furniture, draperies, people—and soundproof Banner Lime walls and ceilings—are always effective agents in absorbing sound energy. A loud sound, from a radio or human voice, would echo back and forth interminably if it weren't absorbed by objects within the room—

And by the walls and ceiling. Banner Hydrated Finishing Lime plastering, three-coats deep, due to its inherent qualities, goes a long way toward absorbing sound waves, preventing echoes and the transmission of noise through partitions.

Specify "Banner Finish" wherever quietness and good acoustics are desired.

NATIONAL MORTAR AND SUPPLY COMPANY

Charter Member of The Finishing Lime Association of Ohio

Federal Reserve Building, Pittsburgh, Pa.

Eastern Sales Representatives: THE ABBEY COMPANY, N. Y.

SPECIFY **Banner**
LIME





Home of L. C. Ritts, Tulsa, Oklahoma.
James Dwight Baum, Riverdale-on-the-Hudson, N. Y., Architect
F. H. Reed, Builder



Colonial Colors in ACME FACE BRICK

This attractive Colonial type home with its delicate and unaffected lines is faced with varying tones of wine-red, brown and gunmetal weather-resistive Acme Face Brick. The color-ideals handed down from the splendid types of pre-Revolutionary days have been faithfully maintained. No other material so successfully lends itself to natural surroundings as brick—the medium through which Colonial architecture, America's finest contribution to a definite and consistent architectural style, has been preserved. Thirty-six years in the art of brickmaking and ten Acme owned-and-operated plants enable us to offer "a brick for every type—a color for every color scheme."

Acme Brick Company

ESTABLISHED 1891

"Manufacturers of the Products We Sell"

Plants—Owned and Operated

Tulsa, Cleveland and Oklahoma City, Oklahoma; Bennetts, Denton and Wichita Falls, Texas; Fort Smith, Little Rock, Malvern and Perla, Arkansas

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Memphis, Tennessee
Monroe, La.
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Paris, Texas
Fort Arthur, Texas
San Antonio, Texas
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Tulsa, Oklahoma
Tyler, Texas
Waco, Texas
Wichita Falls, Texas

WELL BURNED CLAYS NEVER DECAY — SPECIFY "ACME"



Fire clay flue lining is fire insurance that will never lapse

CLAY PRODUCTS ASSOCIATION
Chamber of Commerce Building • CHICAGO

EASTERN CLAY PRODUCTS ASSOCIATION
Colonial Trust Building • PHILADELPHIA

Send for literature

FIRE CLAY
Flue Lining

AF12—Gray



Nature's Permanent Mineral Colors



Made
Since
1887

The Rebirth of Color

Made
Since
1887

NOWADAYS, so many things are possible—even "bricks without straw"! But brick walls without mortar have still to be achieved.

Plain mortar, however essential, is never interesting in itself. Hence, the architect with a "feel" for something beyond mere utility faces a definite problem. He may conceal his mortar or he may beautify it.

Mortar, of course, can be beautified in one way only—by coloring. With a careful use of pigment any mortar can be made to blend or to contrast with the masonry and so to heighten the desired effect. Incidentally, the architect who employs color judiciously aligns himself with the clear trend of the times. In architecture, happily, the day of sombreness is over; the day of color here.

Color samples of Clinton
Mortar Colors and complete
information sent upon request

CLINTON METALLIC PAINT CO.
4127 Clinton Road, Clinton, N. Y.



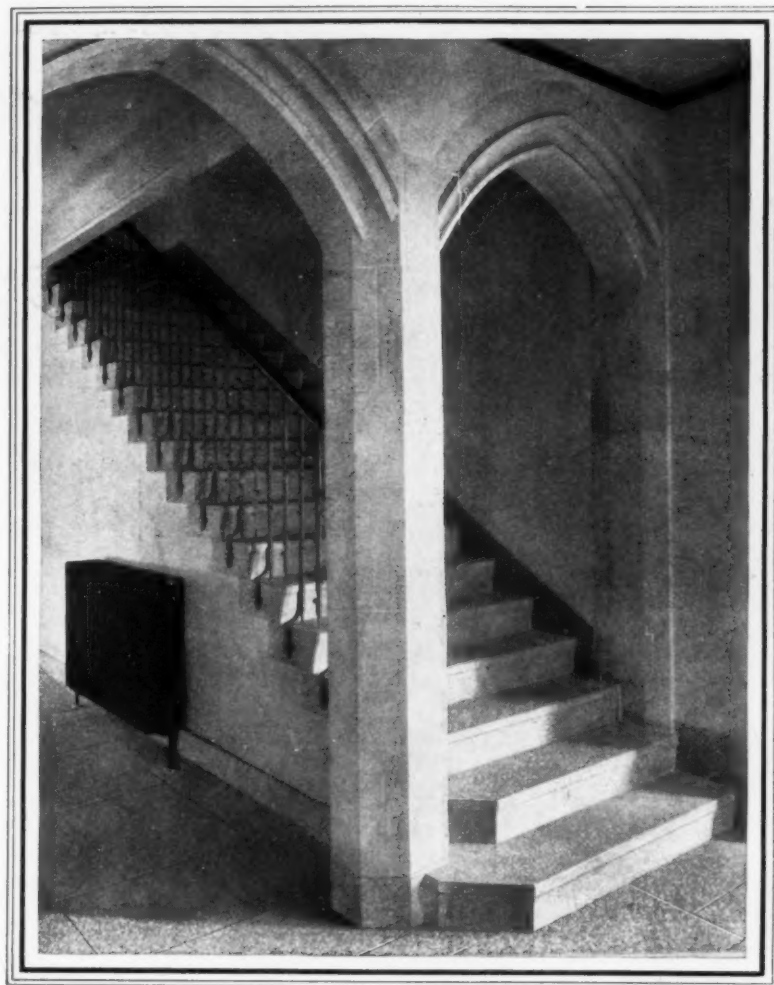
Clinton Mortar Colors



CLINTON
METALLIC

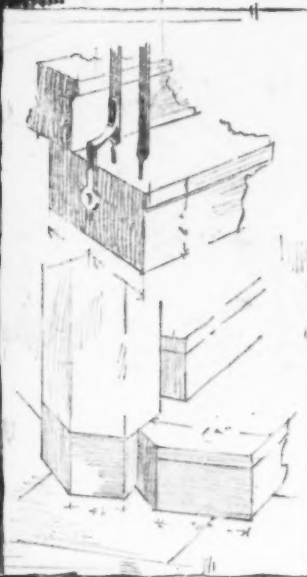
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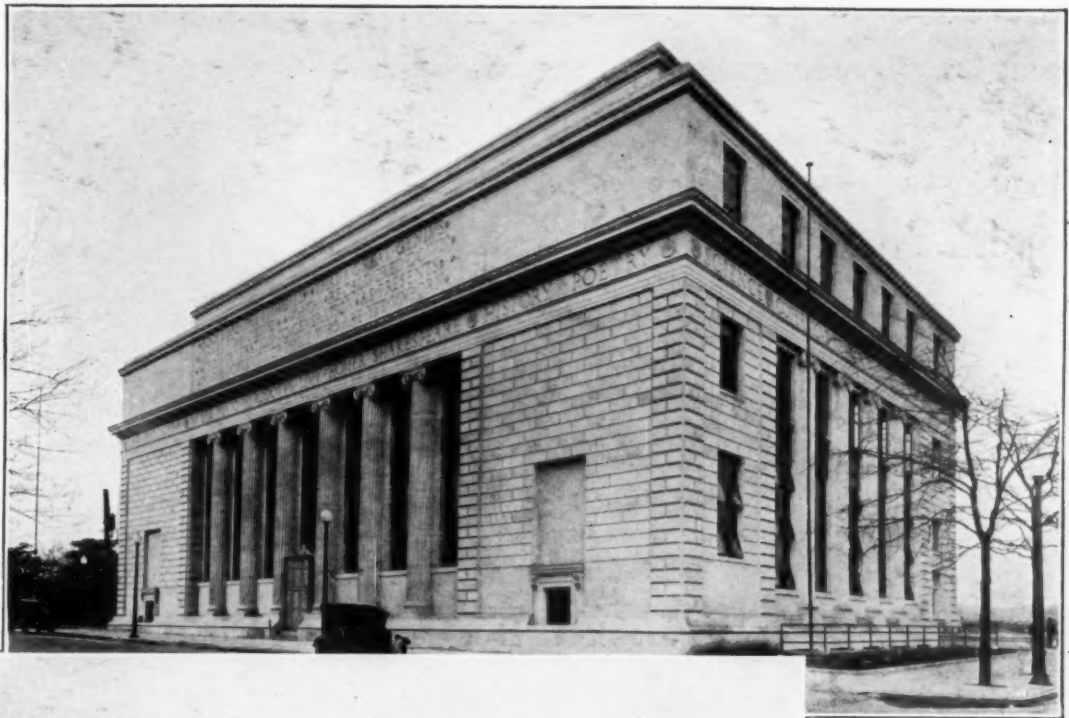
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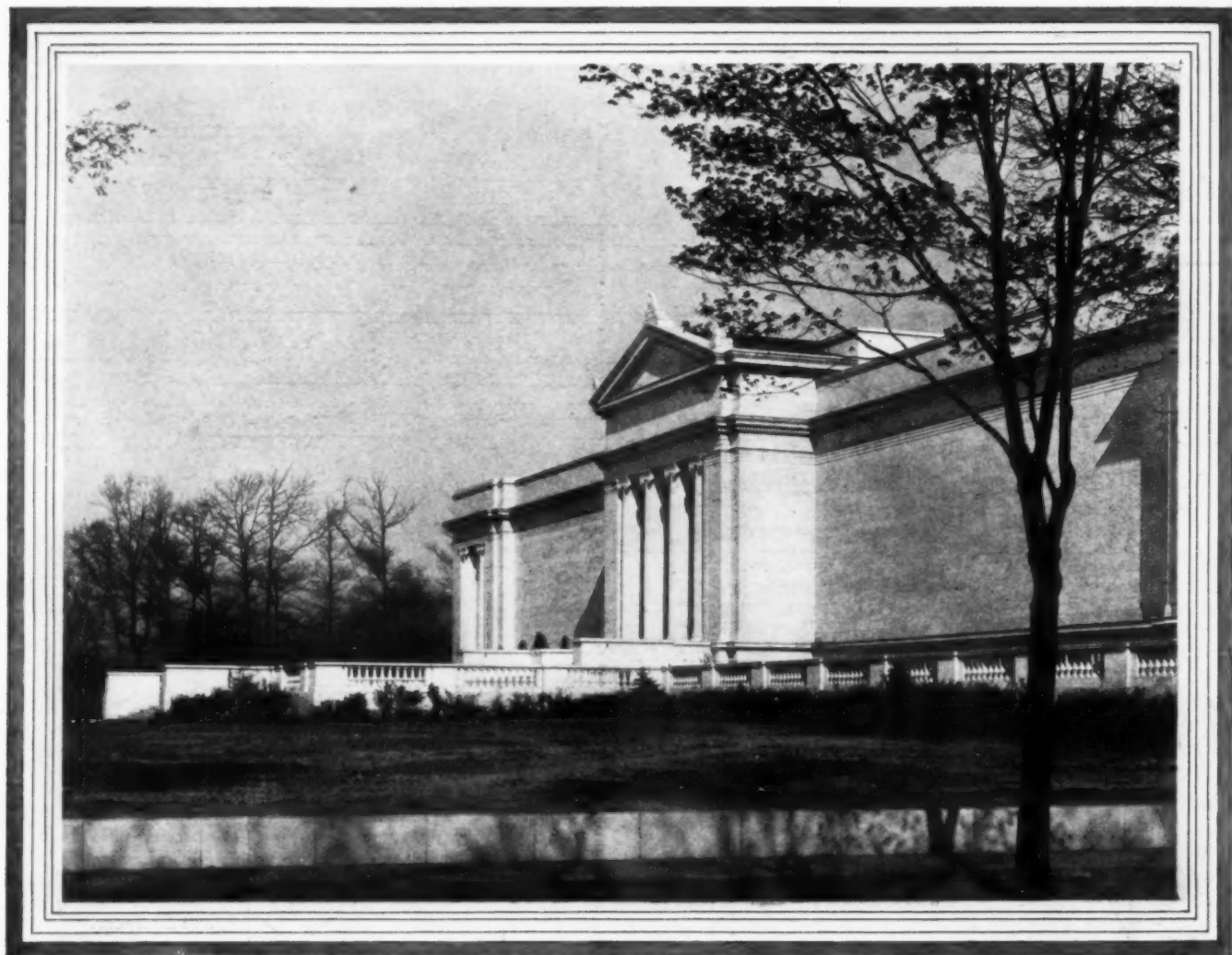
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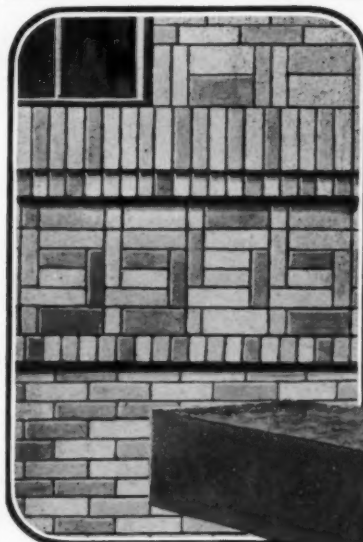
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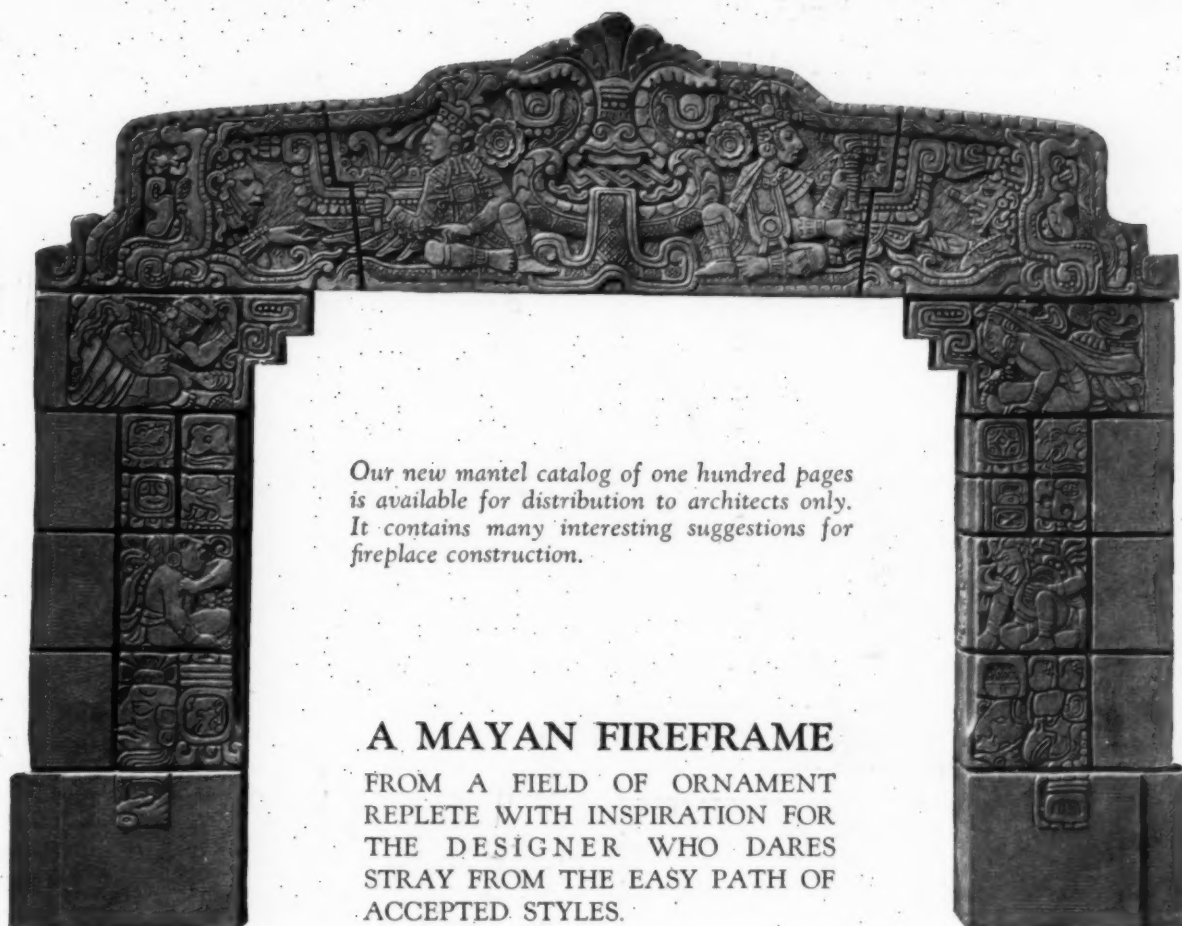


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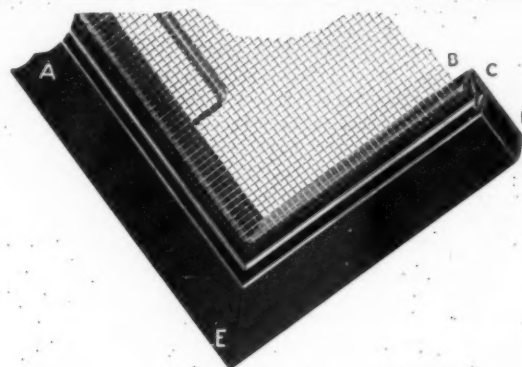
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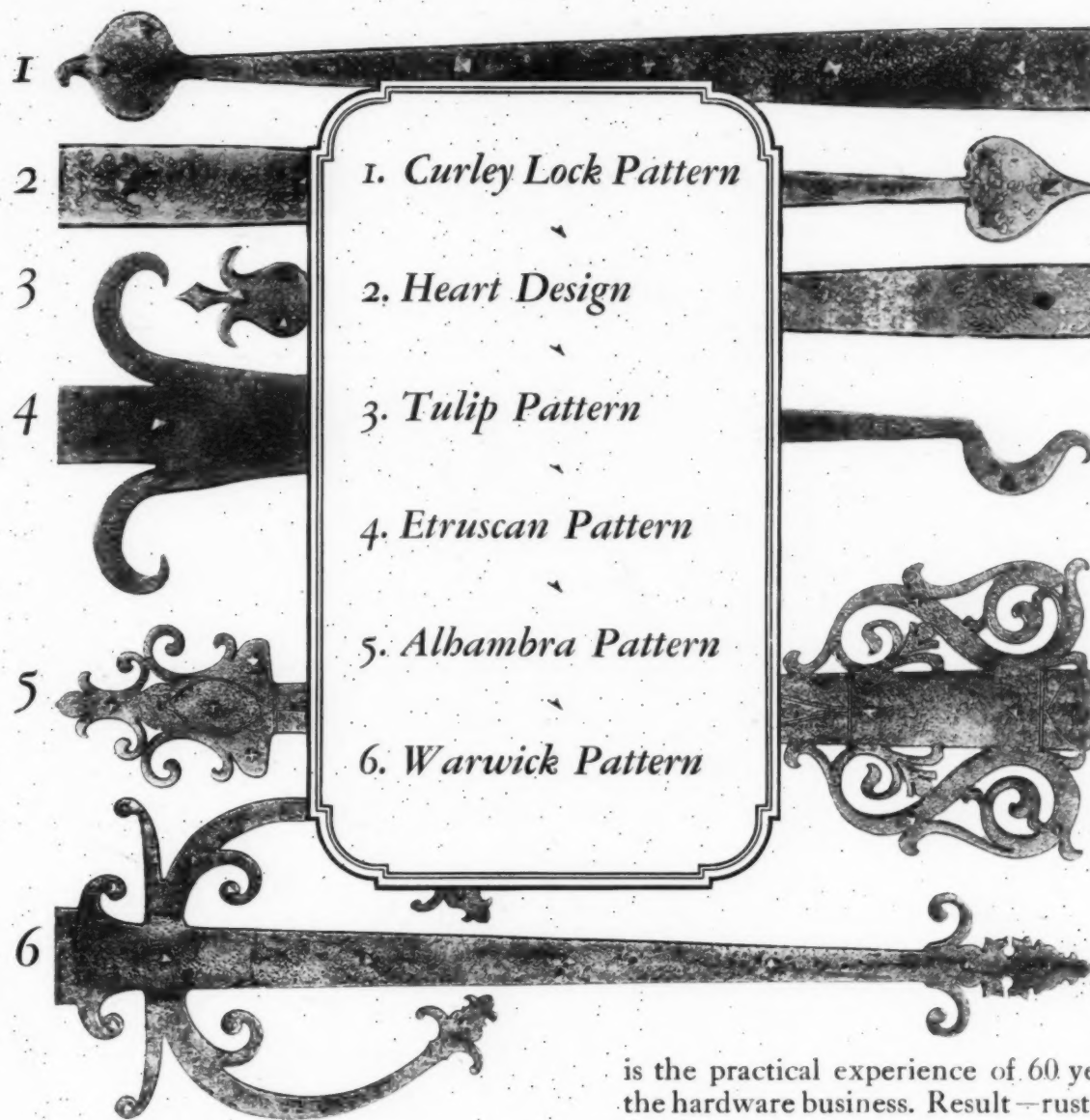
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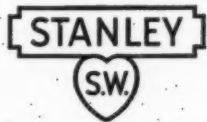
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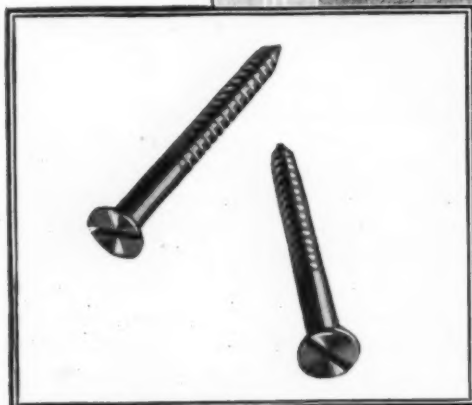
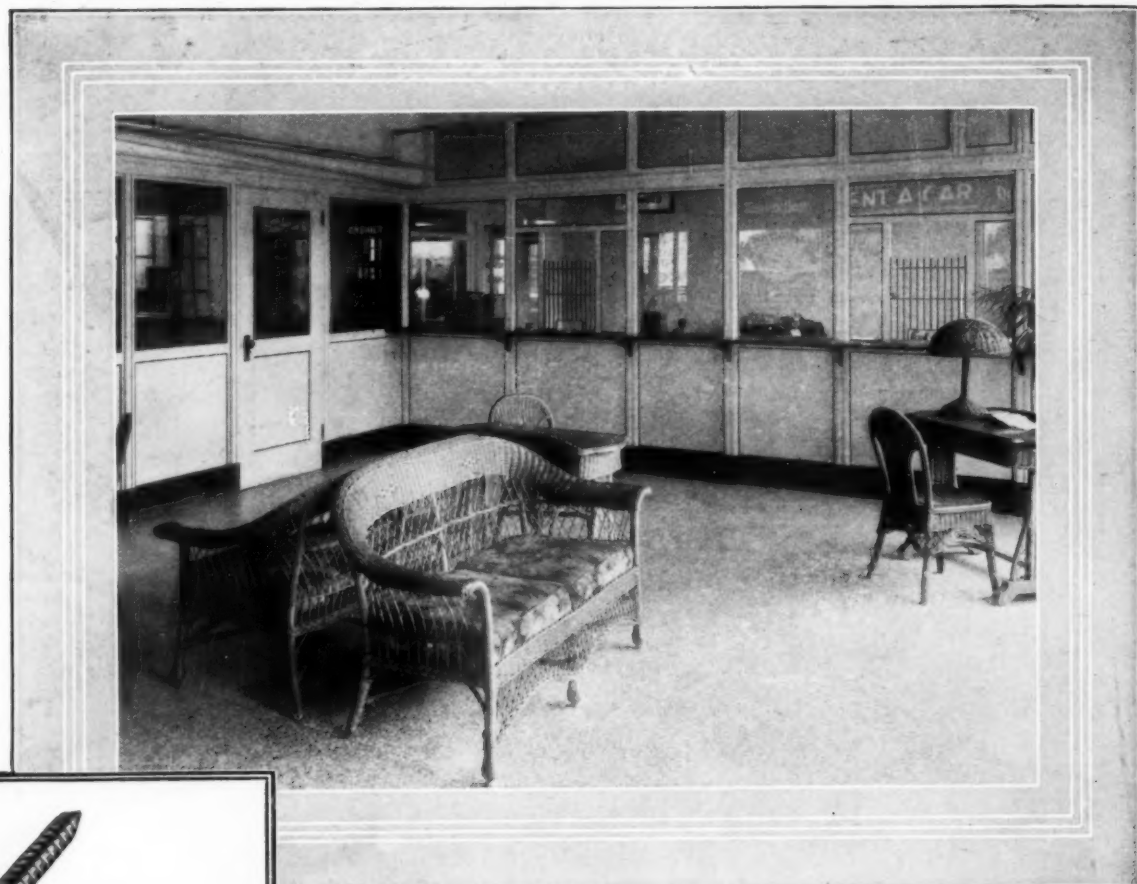
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BOOK DEPARTMENT

Minor Buildings of Brittany and Normandy

A Review of Provincial French Types

AS the author points out in his introduction, "the smaller buildings and particularly the smaller examples of domestic architecture of any district have a fascination due not alone to the fact that they are particular witnesses to the life of the times in which they were built, but even more to the fact that they have an intimate appeal to a great majority of people. The larger and more monumental work will be admired, but when the smaller and more picturesque work is at hand an intimate relation arises immediately, together with a certain desire to possess something similar. There are few persons, regardless of how formal may be their general mode of living, but have a latent desire for at least a period of simple informality, while for the vast majority, circumstances of one kind or another have imposed upon them more or less simplicity of living."

If Mr. Foster needed any convincing excuse for the publication of his book, that excuse could be found in his own words just quoted. As a matter of fact, he needs no excuse, and the existence of the volume is fully justified by the excellence and variety of the material it contains. Any book, indeed, is more than welcome if it tends to the betterment of small house design, whether the scope of such design be rural, suburban, or for the closer limits of the city. Despite all that has been accomplished in this direction,—and much substantial progress has been made within the past few years,—a more general consciousness of opportunity and a keener sense of responsibility need still to be aroused in order to lessen the number of small house atrocities that continue to be perpetrated on every hand. From sheer force of numbers, the small house is bound to give the prevailing architectural tone to any given part of the country. It is vitally important, therefore, that the character of the small house should be a subject of concern, not to architects alone but also to the general lay public. Fortunately, Mr. Foster's volume, besides presenting abundant subject matter of immense suggestive value to the architect, is well calculated to excite both the interest and admiration of cultivated laymen with an intelligent outlook upon architectural affairs.

To design and execute creditably a house patterned in the picturesque, informal manner of any local traditional type,—whether French or British, Spanish or Italian,—is a far more difficult matter than it is to follow acceptably all the methods and peculiar niceties of some familiar and well established mode. It requires not only a broader knowledge of all manner of minutiae but also a peculiarly sympathetic grasp of all the conditions out of which the type chosen as a working basis was evolved. Furthermore, it calls for a clear perception of the essentials underlying the desired picturesque

quality; otherwise the result is likely to bear the stamp of affectation and prove a source of satisfaction only less ephemeral than a piece of stage setting. As Mr. Foster aptly observes, "a good picturesque design is difficult to achieve because of the very anomaly of the two words. 'Picturesque' rather precludes 'design.' It is more accidental, with various parts added by chance and because of definite requirements; it depends for its charm more on mass and texture and color than on symmetry and detail. To be sure, there is always a certain amount of balance, but it is that balance which comes as a natural result of the instinctive desire for order and repose rather than as the result of studied design,"—and particularly true of French architecture.

With the foregoing considerations ever in mind, a close study of the churches, cottages, town groups, manor houses and farmhouses illustrated in this volume cannot fail to be immensely profitable. Every drawing and half-tone will bear repeated scrutiny and analysis; each inspection will yield a fresh store of stimulating suggestion. The 84 plates contain over 130 half-tones and ten drawings by Mr. Rosenberg, presented in his customary fascinating and convincing manner. The subjects illustrated are all in Normandy and Brittany and display a striking diversity of types not easily to be paralleled elsewhere in France within a like territorial compass. As might be expected, Normandy holds the majority of these varied types. The whole region, as the author indicates, is peculiarly rich in domestic architecture instinct with sincerity and simple straightforwardness,—architecture that is purely ingenuous and not at all "on parade,"—but it is impossible to agree with his statement that Normandy contains but "few fine town houses and few real chateaux." The great chateaux of the Loire valley,—the chateau country, par excellence,—one does not expect to find multiplied over the face of the entire country, of course, but hidden away in secluded valleys are many chateaux that are veritable gems, and they can hold their own with anything in chateaudom, in quality if not in size. Much of the charm of Norman small domestic architecture depends upon the materials and the way they are used, the textures secured, and the colors shown in the ensemble. Mr. Foster's notes on materials, textures and colors, therefore, will prove an especially useful feature of the book and will materially aid the designer in catching the spirit which animates this particularly delightful and yet highly elusive type of domestic architecture.

COTTAGES, MANORS AND OTHER MINOR BUILDINGS OF NORMANDY AND BRITTANY. By William D. Foster, with Sketches by Louis C. Rosenberg. Text and 84 pp., of plates, 10½ x 13½ ins. Price \$10.00 Net. The Architectural Book Publishing Co., 31 East 12th Street, New York.

Any book reviewed may be obtained at published price from THE ARCHITECTURAL FORUM

GRADE SCHOOL BUILDINGS; BOOK II

IN no department of architecture have the last ten years seen quite the progress which has been made with schoolhouses, a class of buildings of the first importance, since they exert a strong influence upon their communities, and by their architectural excellence or the lack of excellence they elevate or lower the architectural standards of entire districts. Study of school structures, particularly at the hands of a group of well known architects, has resulted in their being given a high degree of architectural distinction and dignity in the way of design, while study directed toward their planning and equipment has led to their being practical and convenient far beyond what was regarded as an advanced standard of efficiency anywhere in America even a few years ago.



Kensington Schoolhouse, Great Neck, N. Y.
Wesley Sherwood Bessell, Architect

THIS volume, a companion to another published in 1914, records the results of endless study and experiment in different parts of the country, summed up and presented. By illustrations of exteriors and interiors, by floor plans and carefully written descriptions and articles by well known architects and educators, the present high standard of schoolhouse design is made plain, and these results which have been achieved by a few architects and school boards are thus made possible to all architects who are interested in schoolhouse design. The compiler has selected from almost 1000 exteriors and floor plans the school buildings to be illustrated, and the volume records "a process of innovation and elimination, namely, the introduction from time to time of features which have been deemed desirable and practical, and the elimination of things which, owing to changed school methods, are no longer required."

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THE PRACTICAL BOOK OF DECORATIVE WALL TREATMENTS. By Nancy McClelland. 273 pp. 8 illustrations in color; 211 in black and white, 8 $\frac{3}{4}$ x 6 $\frac{1}{2}$ ins. Price \$10. J. B. Lippincott Company, Washington Square, Philadelphia.

IN the modern revival of interest in the different arts, one of the most fascinating subjects is that which deals with decorative wall treatments, an art which has known its periods of inception and growth, dating back to the time of the Pharaohs, 4,000 or 5,000 years ago, until between the thirteenth and eighteenth centuries, wall treatments reached their highest development and were most important in aiding interior architectural expression. Research into the phases of interior wall decoration provides matter of interest and is of great importance to the modern world of architecture and decoration.

Among the various wall treatments which have been in use, wood paneling was greatly favored in England in Tudor and Stuart days, and became very popular here in America, as also was it the most important feature of Louis XV walls, usually made of oak or pine in curving panels, painted in delicate and vivacious colors. Mural painting, introduced to the modern world in the first half of the fifteenth century by such masters as Raphael, Veronese, Titian and Tintoretto, became architectonic in character. Mural paintings became huge pictures framed in architecture. The use of *simili-architecture* made its way into other countries. The first attempt at mural decoration in America came with the use of stenciled borders in simple designs followed by what are known as "American frescoes." These paintings were largely naïve landscapes with many trees, birds, flowers and picture subjects. Although the art of fresco painting began before the Christian era, its greatest development for decorative purposes commenced in Italy in the thirteenth century, Giotto being the most eminent fresco painter of this age, followed by Masaccio, Fra Filippo Lippi and Botticelli in the fifteenth century. Marbleizing, the art of veining or graining in imitation of marble on plaster, slate, wood, iron and glass, was another form of wall treatment which was used extensively in Italy during the fourteenth and fifteenth centuries. The great master, Raphael, made use of marbleizing in the Stanze of the Vatican, where cost was not a matter of much consideration. In Italy in the seventeenth century, when real marble could not be procured or afforded, dadoes, cornices, pilasters, and other architectural features of wood and stucco were marbleized in a fashion to deceive the most critical eye. Much architecture was painted illusion, instead of being actual construction. Wherever there were great plaster wall spaces not covered with frescoes, figures or landscapes, painted architecture became common, especially in Tuscany, and so perfectly were these architectural schemes carried out that they seemed actually in relief. Cornices, pilasters, niches with figures and pediments over doors, were done in light and shadow in the most convincing and reassuring manner.

In this volume Miss McClelland has handled with the utmost deftness a fascinating subject, and far from being technical for the layman, it is, nevertheless, invaluable to the technician. The author has given us many elaborate schemes of decorative wall treatments, among which will be found certain elements capable of being transplanted into our own dwellings. Among these, use of tiles for wall decoration is perhaps the oldest, adopted from the Orient in the fifteenth century by Spain and



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Bertram Grosvenor Goodhue

Architect and Master of Many Arts

PERHAPS no architect who ever lived in America built up more of a personal following than Bertram G. Goodhue. His was one of the two or three names which came instantly to mind when Gothic ecclesiastical architecture was mentioned, and his churches, many and prominent, have exerted their influence upon ecclesiastical architecture all over the world. But Mr. Goodhue was equally talented in other and quite different ways. He well knew how to handle architecture of entirely other kinds, and his drawings, book plates, illustrations and type faces were of such note that they all but compete with his work as an architect of Gothic churches.



THIS volume constitutes a record or review of Mr. Goodhue's achievements in many fields. Those who collaborated or worked with him have contributed to its text, and its illustrations set forth the excellence of his work in all the arts of which he was an acknowledged master. It is a magnificent and authoritative work, issued by the Press of the American Institute of Architects.

Text and 273 Plates, 11 x 14 inches
Price, \$30

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Holland, countries which have made the most lavish use of tiles, and it is to these two countries that we owe many beautiful tile designs and practical suggestions for their employment. Both England and America favored use of the famous Delft tiles, which were made in Holland from the commencement of the seventeenth century, and which were generally white decorated with blue and yellow. Among the many illustrations in this volume may be seen one of an interesting arrangement of old Persian tiles; the skillful employment of the patterned wall surface and its combination with other materials is especially notable. The art of making decorated leather began with the Arabs or Moors, dating from the thirteenth century. Cordova in Spain was the seat of this industry in the fifteenth and sixteenth centuries, and so famous did the Spanish industry become that leather hangings are even today generally known as "Cordovanes."

Today, many signs point to the revival of the decorative idea. There is a live and healthy interest in architectural features, such as wood paneling. Mural painters are perhaps more busily occupied than they have been for years, and those who furnish us with wallpaper have been among the first to feel the stimulating reaction against monotone backgrounds that now prevails. Since wall paper was developed in the fifteenth century, there have not been so many fine designs as there are today, beginning with the handsome scenic papers, that combine vigor of color with fine motifs in panoramic variety, and ending with those showing minute dots and flower petals. Many wall papers which depict historical events do not cover the entire surface of the wall; but are used very effectively in panels, as may be seen in certain rooms at Fontainebleau. Scenic papers are delightfully called "story papers" in France because each is a variegated theme, either of some landscape or of some familiar fable.

Miss McClelland considers not only the various forms of fixed wall decoration that may be employed to give beauty to a room, but devotes an entire chapter to the many forms of movable wall decorations which include pictures, mirrors, wall lights and wall clocks, hanging shelves, carvings and textiles, whose functions are quite as important in their way as are the built-in decorations. Scale, balance and suitability are taken into consideration as well as color schemes. This volume is unusually well illustrated with interiors abroad as well as in America.

EARLY AMERICAN FURNITURE. By Charles O. Cornelius. 278 pp., 5½ x 8 ins. Price \$4. The Century Co., New York.

STUDY of the origins and development of interior architecture, decoration and furnishing in early American days received a decided impetus with the opening of the Early American Wing at the Metropolitan Museum. For the first time there was presented upon an adequate scale the development of the American interior, rooms being arranged in the ways which prevailed in different localities at different times; in most instances, in fact, actual interiors are used, and the furnishings are authentic pieces of the different periods. The guide to the Early American Wing, published by the Museum is helpful and complete, but something more than a guide book has been required for complete study of the Wing and its treasures. An excellent and concise history of early American furniture correlated to the contents of the Early American Wing is what this work is in effect, the numerous illustrations being largely from that source.

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TREES IN WINTER; THEIR STUDY, PLANTING, CARE, AND IDENTIFICATION. By Albert Francis Blakeslee and Chester Deacon Jarvis. 446 pp., 5½ x 8½ ins. Price \$2.50. The Macmillan Company, New York.

ONE of several subjects related more or less closely to architecture which is just at present receiving considerable attention is concerned with the selection, planting and care of trees. Particularly in rural places the presence or the lack of suitable trees goes far toward either making or marring the effect of buildings which are in themselves good, and since streets in cities and towns are ordinarily planted with trees, the subject has its application to localities urban as well as to districts rural. And yet it is really amazing to see the stupidity with which the matter of tree culture is approached. In New York one frequently sees young trees struggling for existence in places where they are surrounded by large areas of asphalt or granitoid pavements, where for them to secure moisture and air for their roots is absolutely out of the question, or else planted in places where, since a subway is but a foot or two below the surface, growth or even long continued life is quite impossible; and even in New York's parks there seems to be utter indifference, or else complete ignorance, of the importance of cutting away from trees the dead wood which comes with neglect and which should be removed.

This work is a helpful survey or review of the entire subject of trees and their care. In addition to discussing the choice of the best varieties of trees for certain uses, it deals with their planting and care, the curing of their diseases, the extermination of moths or insects which

threaten their lives and often kill them, the removal of fungi, and their proper treatment when they are so injured by wind, ice, or snow that limbs must be amputated and wounds healed. It may well engage the attention of architects and engineers as well as of the landscape architects, to whom it is presumably primarily addressed.

THE ANALYSIS OF ART. By De Witt H. Parker. 190 pp., 6 x 9 ins. Price \$4. Yale University Press, New Haven.

THE wide gulf fixed between public understanding and real appreciation of art in its various forms is largely the result of misunderstanding of just what art is and what it means. Our museums are thronged by people who are drawn thither not by curiosity but by a genuine yearning for a closer knowledge of art in its various forms, and the lectures and informal talks which thoughtful museum officials provide supply for many the interpretation of what the visitors see and unlock the door which for most people is shut between art and understanding. For many, however, if this door is to be opened at all it must be not so much by the aid of the spoken word as by that of the printed page, and this is what has been done by Professor Parker, of the Department of Philosophy in the University of Michigan, in a volume made up, as the preface points out, of material used in lectures given at the Metropolitan Museum during January, 1926. The work does not attempt to offer a complete survey of the large field of aesthetics, but rather to afford study of some of the basic problems of the philosophy of art, and to focus interest and attention.

PROVINCIAL HOUSES IN SPAIN

By Arthur Byne & Mildred Stapley

ARCHITECTS value Spanish types of domestic architecture because of their simplicity of design and plan and also because they are easily developed in materials inexpensive and easily had. Spain offers a choice of several kinds of residence architecture, types sufficiently different from one another to afford considerable range of selection, yet all possessing the same strength and virility, the excellent lines, the same graceful but unaffected grouping, and the discriminating use of detail which renders distinguished so many Spanish domestic buildings.

Houses in various parts of the Spanish peninsula, particularly the buildings of medium size in rural districts or provincial towns, offer excellent precedent for use in different parts of America where climate conditions are about what prevail in the provinces of Spain.



IN this volume two well known writers on Spanish architecture and decoration review the various forms which are given to the small or medium sized house in Spain. To render the work as helpful as possible to architects, the authors have included many plans and drawings of different kinds, details of such exterior parts of buildings as friezes, cornices, windows, timber overhangs, soffits and balconies, or of such interior parts of the structure as ceilings, fireplaces, doors and stairways. Part of the work deals with the tiles, pottery, ironwork, plaster in relief and the other forms of craftsmanship which contribute so much to the excellence of domestic architecture in Spain. It is a work likely to be invaluable to the designer.

The book contains text and 190 plates 12½ x 16 inches, and is bound in cloth. Price \$25, postpaid.

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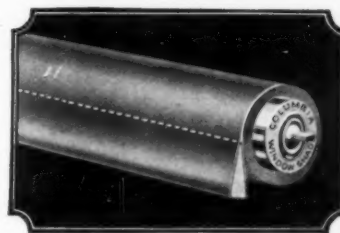
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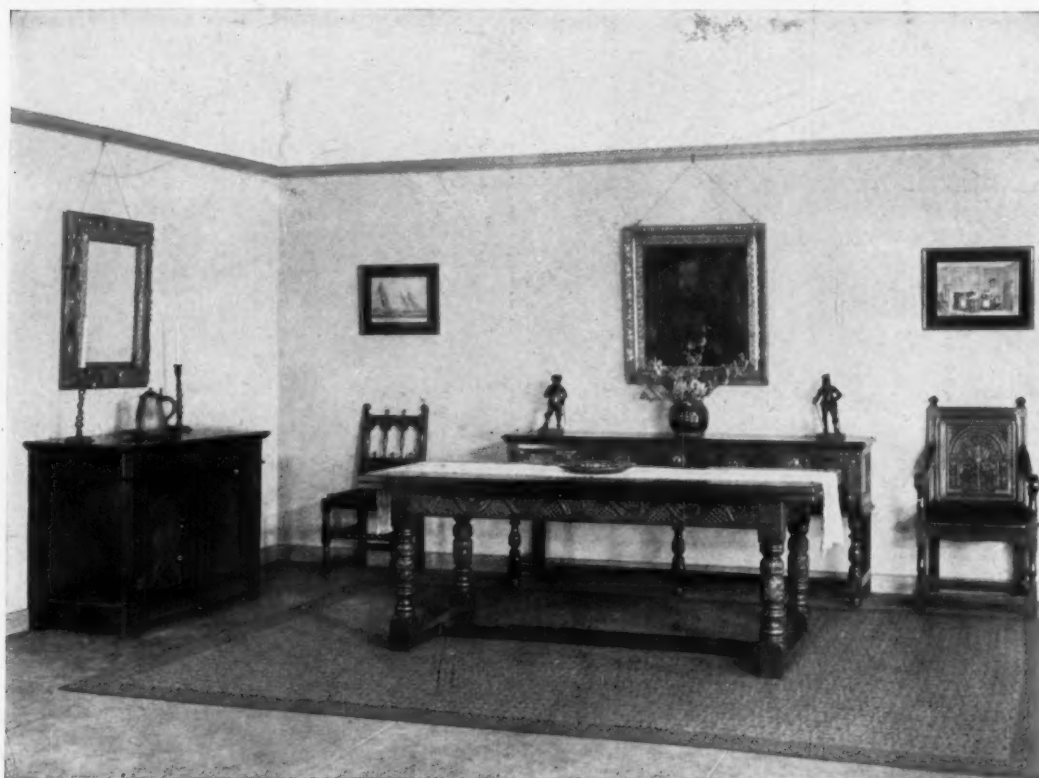
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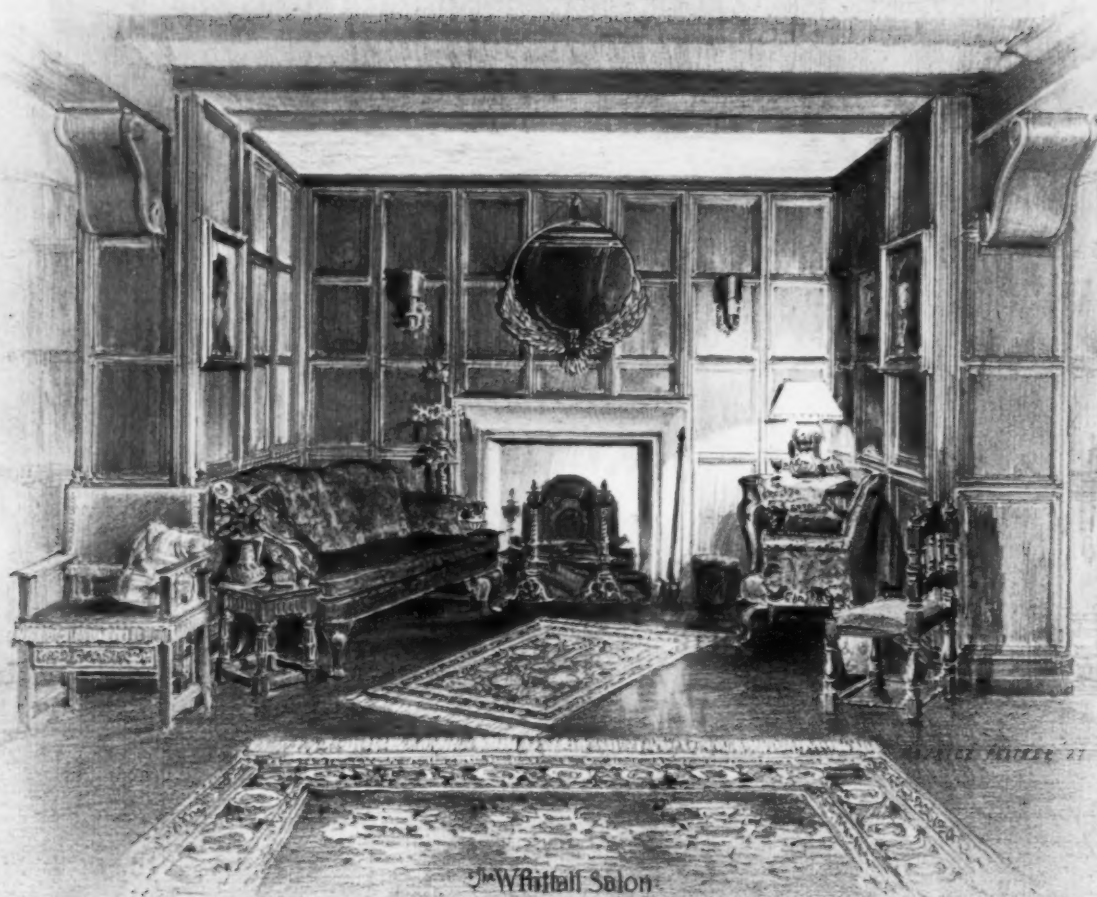
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Plate 15

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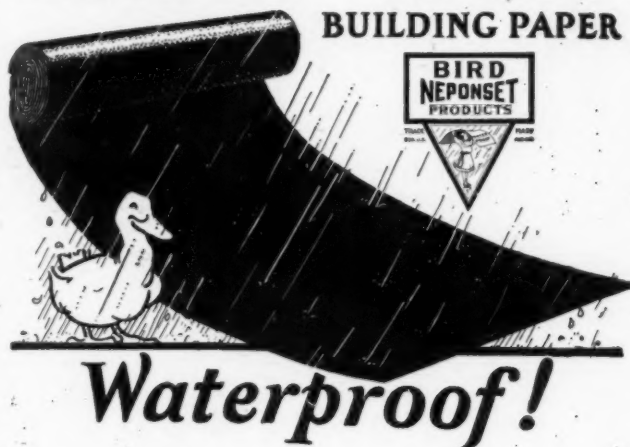


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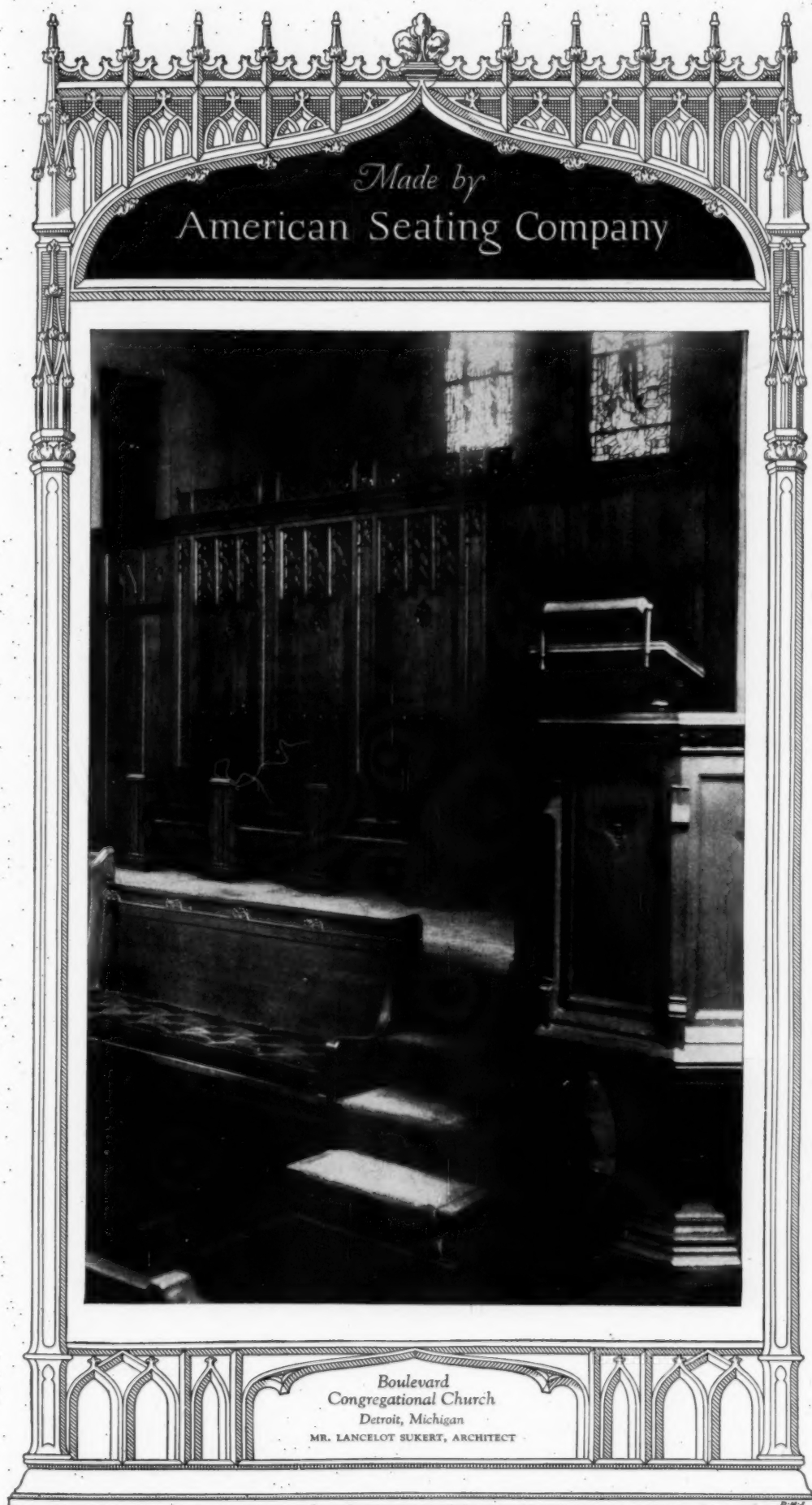
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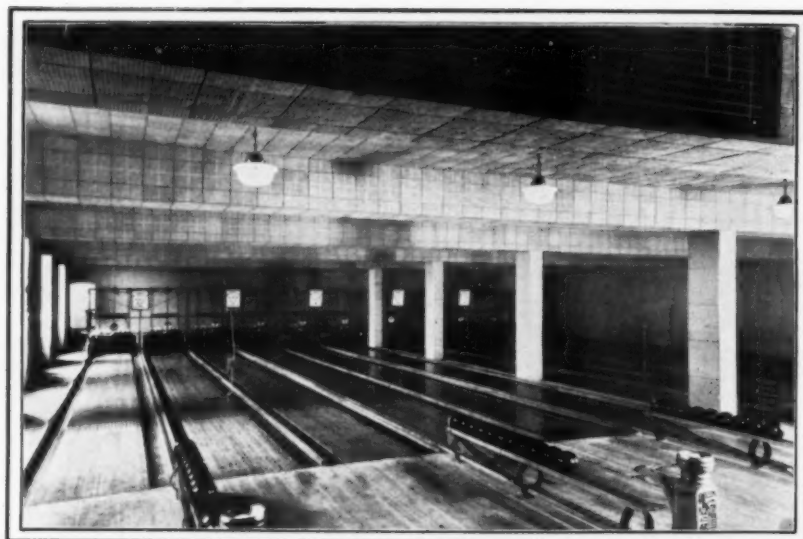
*Illustrating the Tabernacle Lutheran Church
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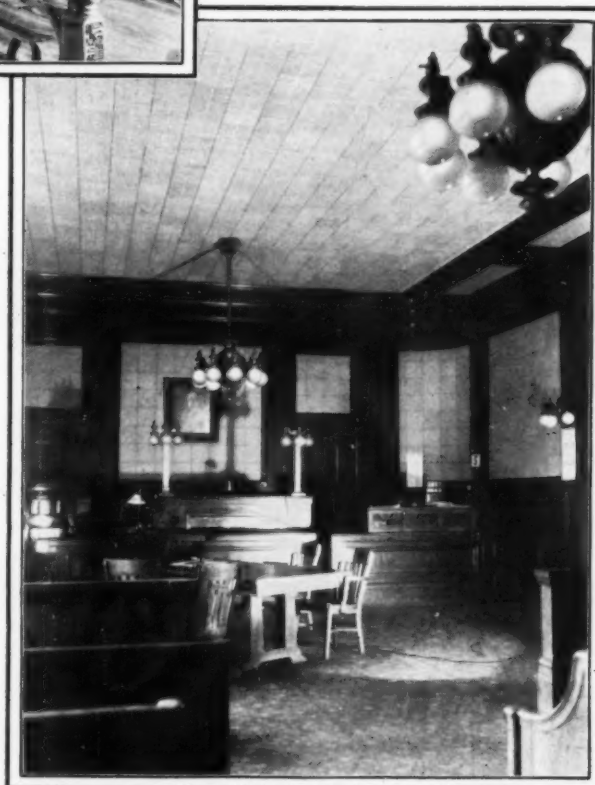
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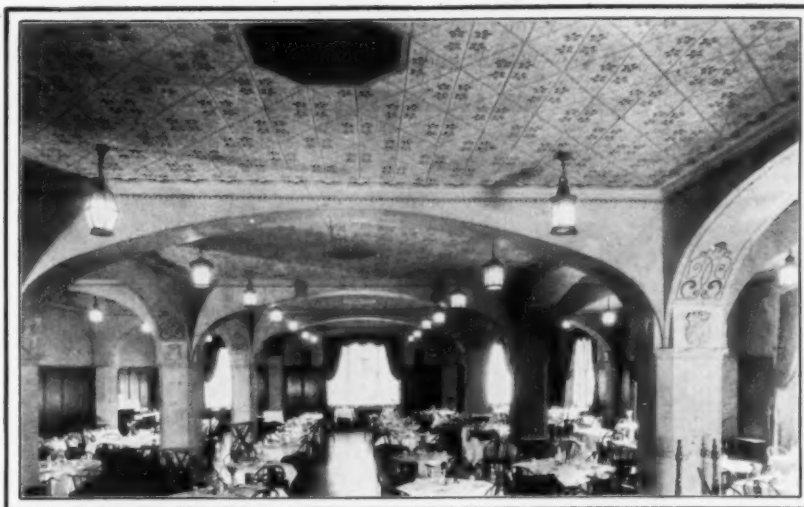


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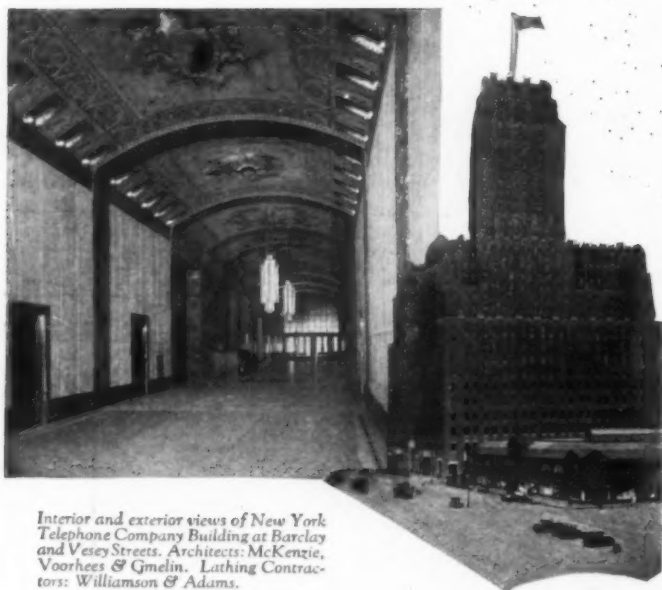
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Interior and exterior views of New York Telephone Company Building at Barclay and Vesey Streets. Architects: McKenzie, Voorhees & Gmelin. Lathing Contractors: Williamson & Adams.

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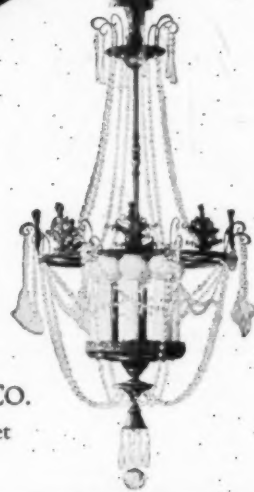
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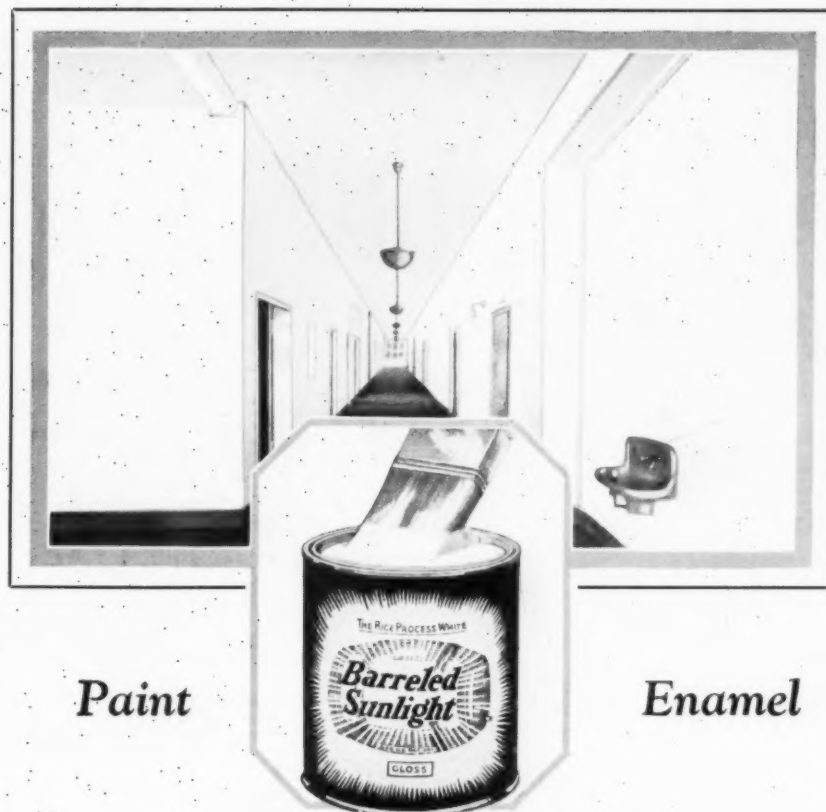


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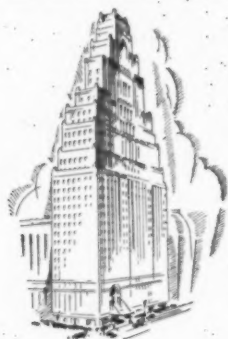
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Color Effects of the French Renaissance



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The Auditorium, seating 4000 people, rises to a height of ten stories. It terminates in a dome around which the public may promenade. Seen from this promenade, the immensity of the hall is emphasized.

The Peacock Promenade on the second balcony level. The walls are hung with paintings. This is one of the many halls and passages which were designed with the object of relieving congestion.

... achieved in the Paramount Theatre with Dutch Boy white-lead paint

THE interior of the new Paramount Theatre, New York, is of the Louis XVI period of the French Renaissance. This interior was designed to reproduce as faithfully as possible the architecture and decoration of that period.

The decoration of the auditorium incorporates the typical ornate cream-and-gold color effects of the period. All architectural details are picked out sharply in gold.

The basic color is a delicate cream verging slightly upon gray. Not only does it serve the spirit of the decoration, but it forms a background well adapted to the colorful theatrical effects produced with artificial lighting.

This delicate cream was also used as the basic color throughout many of the other rooms in the theatre.

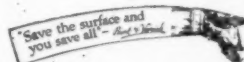
In the Peacock Promenade, for instance, this color is used as a background for other colors. A light blue gray is used in the sunken ceiling coffer, and a light grayish green in the lunettes. The fine striping on the pilasters is done in gold and greenish blue. The panels on these pilasters are treated with a Crumpled

Roll finish in a grayish blue that is slightly warmer in tone.

These delicate tints were readily obtained with Dutch Boy white-lead and flattening oil. This paint can be tinted to any color desired. For that reason it is especially adapted to interior decorating work of any kind. And it produces a handsome flat finish which repeated soap-and-water washings will not mar.

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"Bearing Gifts to the Sun God"

THIS painting, representing a votive offering to the God Horus, was found on the wall of an Egyptian tomb dating back somewhere between 2500 and 3000 years. The colors were mixed in wax. In spite of centuries of conditions unfavorable to their preservation, the colors are as fresh and vivid today as though laid on yesterday.

A Lost Art Revived ~

Thousands of years before oil colors were invented, the ancient Egyptians produced mural paintings with colors carried in wax.

Every specimen of these ancient paintings in existence today is remarkable for one feature—the colors are still as fresh and vivid as though laid on yesterday.

Modern colors mixed with Johnson's Liquid Wax Glaze instead of oil have this same imperishable quality. They retain their freshness and vividness under all conditions. The ancient art of Encaustic painting, lost to the world for 1500 years, and now revived with many practical improvements, offers new possibilities and advantages to architects, contractors and decorators for the artistic treatment of walls in buildings designed both for private and public use.

1. Every color effect suitable to the finish of walls can be obtained, in any desired combination of color, shade, tint or tone.
2. Mottled, shaded and pastel effects, impossible to produce with any other finish, give the decorator an unlimited range of artistic treatments.
3. Experiments in color schemes, where necessary, can be made on the wall and easily removed or changed until satisfactory. With no other medium is it so easily possible to meet the wishes of a critical customer.

4. Colors mixed in Johnson's Liquid Wax Glaze do not fade in sunlight, nor are they affected by room temperatures or dampness.

5. If it is necessary to remove surface dirt from a wall finished with Johnson's Liquid Wax Glaze, it can be washed with soap and water.

6. Johnson's Liquid Wax Glaze is extremely economical, both in application and material cost. Each section of the wall can be finished in one operation. No resetting of ladders or scaffolding is necessary. Johnson's Liquid Wax Glaze has a covering capacity of 700 square feet per gallon.

7. It is extremely simple to apply. Only the simplest tools are needed. There is absolutely no danger of laps, streaks or brush marks. Any good decorator can handle this new finish perfectly with a little practice.

8. The finish can be removed entirely, at any time, by washing with Johnson's Natural Wax. The surface is left in ideal condition for refinishing. It is not necessary to use drop cloths, or tear up rooms.

To the Egyptians, and after them the Greeks and Romans, we are indebted for the idea of producing Johnson's Liquid Wax Glaze. Retaining all the good qualities of Encaustic painting, it simplifies the process tremendously, and extends its range to cover every modern need for artistic wall treatment.

Finished panels are on display at all our branch houses. See them, or write for a free trial quart of Johnson's Liquid Wax Glaze and make a few experiments, following the simple instructions on the other side of this insert. Be the first to offer this new wall finish in your community.

JOHNSON'S LIQUID WAX GLAZE

How to Use Johnson's Liquid Wax Glaze

Johnson's Liquid Wax Glaze is specially prepared for use on wall surfaces. Like Johnson's Liquid Wax for floors, it is made from the best quality of raw materials, gathered from the four corners of the earth. For this purpose, a wax is required that combines all the following features—the highest percentage of fine, hard waxes; ease of application; smooth, uniform body; pleasing color and odor; hard drying and, above all, the capacity for a perfect finish.

Johnson's Liquid Wax Glaze combines all these qualities. Colorless in itself, it can be easily and quickly colored to any desired tint or tone with any standard, chemically pure oil color. This makes it very convenient and economical, since the decorator can mix his own colors in the quantity needed for each particular job.

If Johnson's Liquid Wax Glaze should become too thick for proper application, due to evaporation, thin with pure Turpentine.

Sizing

After the wall coating (Sand plaster, Textone, Craftex, Stucco, Muraltec, Rufkote or other coating) is thoroughly dry, apply one coat of a 50-50 mixture of Johnson's Permacote and Johnson's Wall Size to the whole surface. This sizing coat is absolutely necessary to stop the natural suction of any wall coating. Allow the size to dry overnight before applying the coat of colored wax. On sand finish plaster, where there is a great deal of suction, we recommend one coat of white shellac (3 lb. cut) over the first size coat, or three coats of flat wall paint, allowing each coat to dry thoroughly.

One-Color or Two-Tone Finish

To obtain a one-color finish apply Johnson's Liquid Wax Glaze, colored to the desired shade with oil color, with an ordinary three-inch paint brush over a section of wall conveniently large for easy working. (Illustration 1.) Then, with a clean, soft cloth, pick up the Glaze until the desired effect is produced.

Rich, attractive two-tone effects can be easily secured by wiping more of the Glaze off the high spots, leaving the depressions darker. Finish by polishing as described below.

Finishes of Two or More Colors

To obtain a multi-colored finish, first apply the colored base coat of Johnson's Liquid Wall Glaze as for a one-color finish. (Illustration 1.)

Second—Spot the other colors to be used over the base coat. (Illustration 2.)

Third—With a clean, soft cloth pick up the colors, blending them until the desired effect is produced. (Illustration 3.)

(Note: On a wall surface which has been properly sized, Johnson's Liquid Wax Glaze can be worked for at least an hour after applying, without danger of laps or streaks.)

Fourth—Polish as directed below.

Gold or Silver Effects

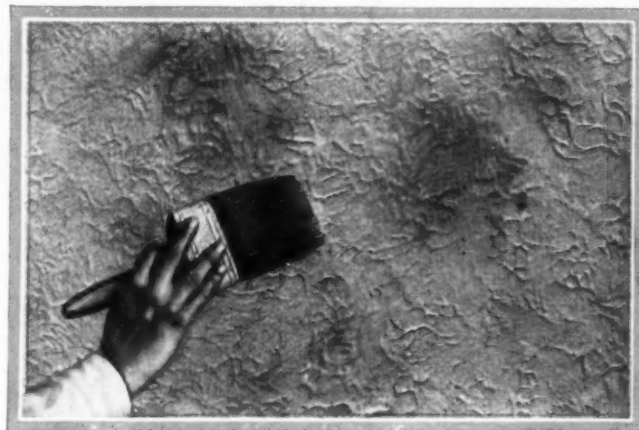
To secure the effect of gold or silver over color, mix a small amount of gold or silver bronze powder in the natural Johnson's Liquid Wax Glaze and apply lightly with a soft cloth, touching only the high spots. Polish when dry as directed below.

Polishing—Important

Allow the Glaze to dry thoroughly (24 hours or more, depending upon the amount of Glaze applied and the temperature of the room). Then polish with a stiff bristle brush. A 4 x 9 inch wax polishing brush without weight or handle is ideal for this purpose. Johnson's DeLuxe Electric Polisher can also be used to good advantage.



Apply the base coat of Johnson's Liquid Wax Glaze with an ordinary three-inch paint brush.



Spot other colors to be used over base coat while wet.



With a clean, soft cloth, blend the colors to obtain the desired effect.

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A. I. A. File
No. 25A21

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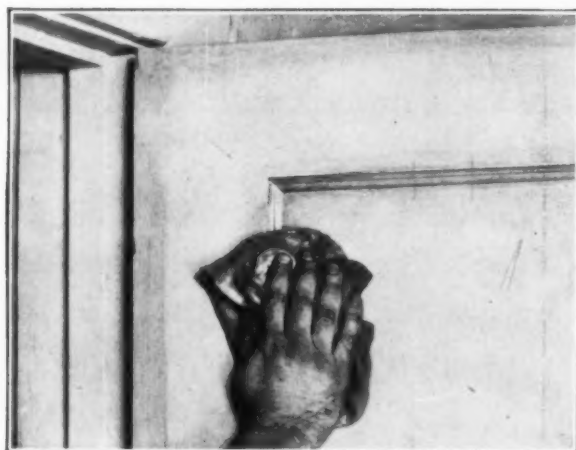
ARCHITECTS and decorators, recognizing the necessity of enduring beauty in decorated wood trim, insist on Pure White Lead in Oil for the ground coats of special finishes. Most finishes require a stipple—and Eagle Pure White Lead is unsurpassed in taking and holding the stipple.

The best foundation for flat finishes

Two coats of Eagle Pure White Lead thinned with flatting oil provide an enduring foundation for flat finishes on doors, paneling, and other interior wood trim. Shade these coats to the tint desired with colors ground in oil. Stipple the second coat of paint with a wall stippling brush. A number of attractive finishes can be placed on these ground coats: bronze, antique, lining panels, etc.

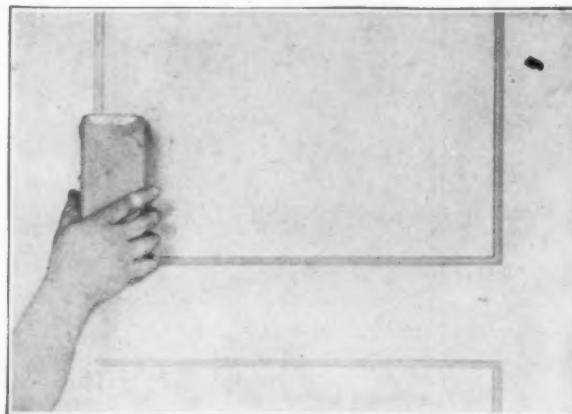
Glazed color finishes require a White Lead foundation

The stipple glazed finishes are produced as follows: Prime with Eagle White Lead thinned



Wiping off the glaze color for antique finishes

with about $\frac{1}{4}$ boiled linseed oil and $\frac{3}{4}$ turpentine. Second coat: Eagle White Lead thinned with flatting oil or with turpentine. Third coat: Eagle White Lead with flatting oil or turpentine; brush on stout coat and stipple on the harmonious glaze color with wall stippling



Stippling the trim about the edges of panels, using standard wall stippling brush

brush—do not paint the glaze color on. Finish with flat varnish to protect the surface.

Antique glazed finishes are best produced on two or three ground coats of Eagle White Lead mixed as for stipple glazed finishes, and tinted to the desired color. Mix glazing color of pigment [ground in oil] thinned with flatting oil; or with glazing liquid of one part turpentine, two parts boiled linseed oil and four parts flat varnish. Brush glazing color over the entire surface and immediately wipe with a clean cloth. Wipe out practically all the color, leaving a dark stain only in corners and along the moulding edges. Finish with flat varnish.

Write for technical information, A. I. A. numbered

The Eagle-Picher Lead Company has compiled technical information on the preparation and painting of interior and exterior surfaces. This information, A.I.A. numbered for specification files, is available to architects, without charge

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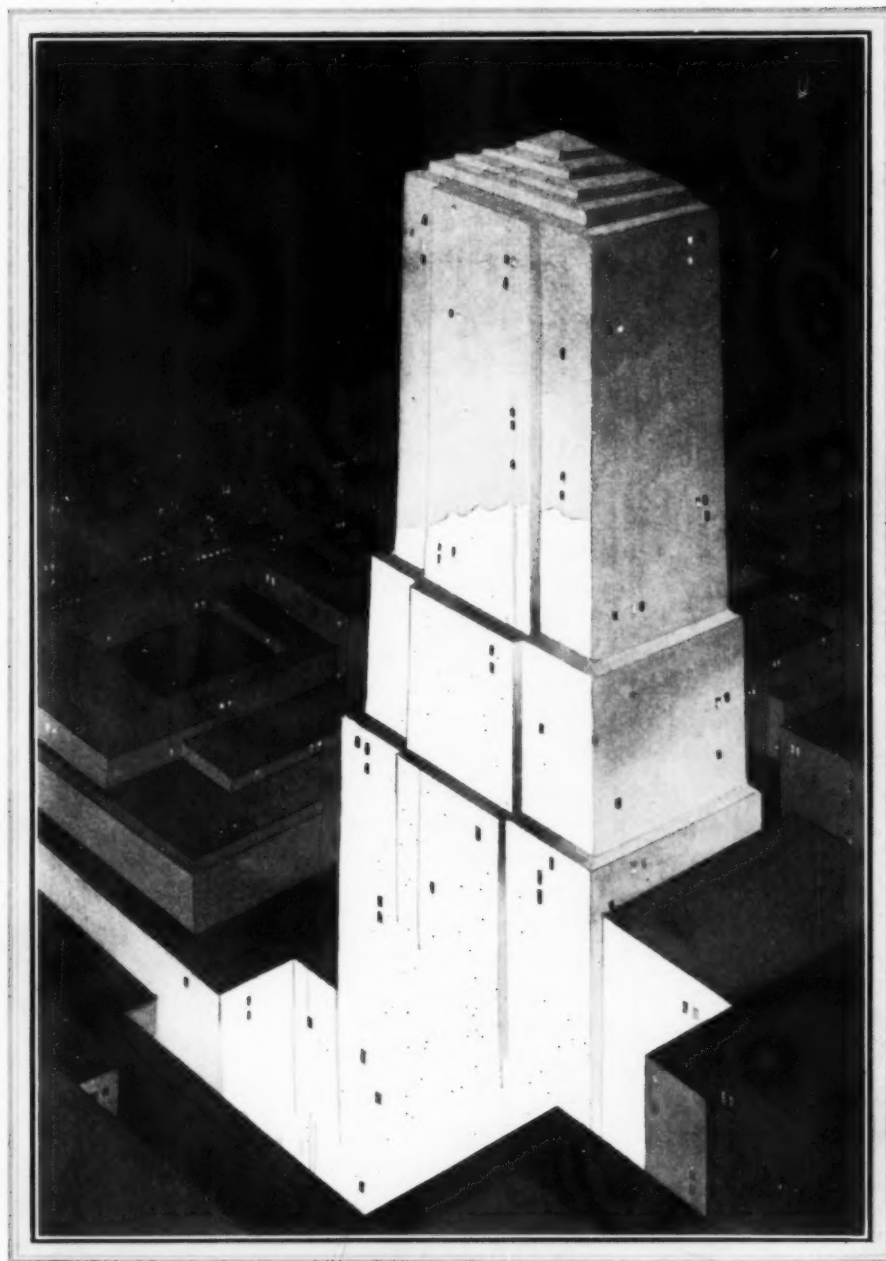


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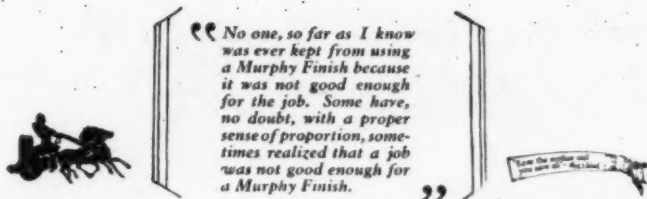
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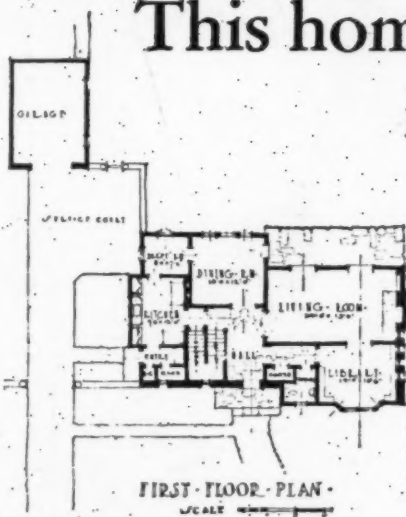
1827

ONE HUNDREDTH ANNIVERSARY

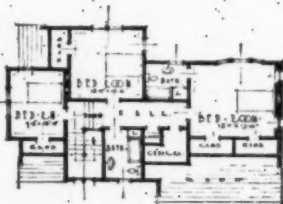
1927



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Day & Klauber, Architects, Philadelphia, Pa.



Interior of one Wing

Open type exhibit cases and habitat cases in the Great Hall and Wings as shown were made and installed by us in the NEW PEABODY MUSEUM, YALE UNIVERSITY. Cabinets and cases of every description and design, installed to fit any requirement of space or purpose.

See American Institute of Architects Specifications, No. 35K for floor dimensions and roughing in



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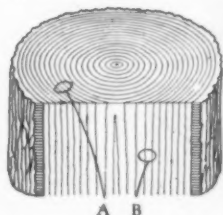


Fig. 1

The climate, soil and drainage of the Appalachian Highlands favor slow tree growth which produces the close annular growth rings (A).

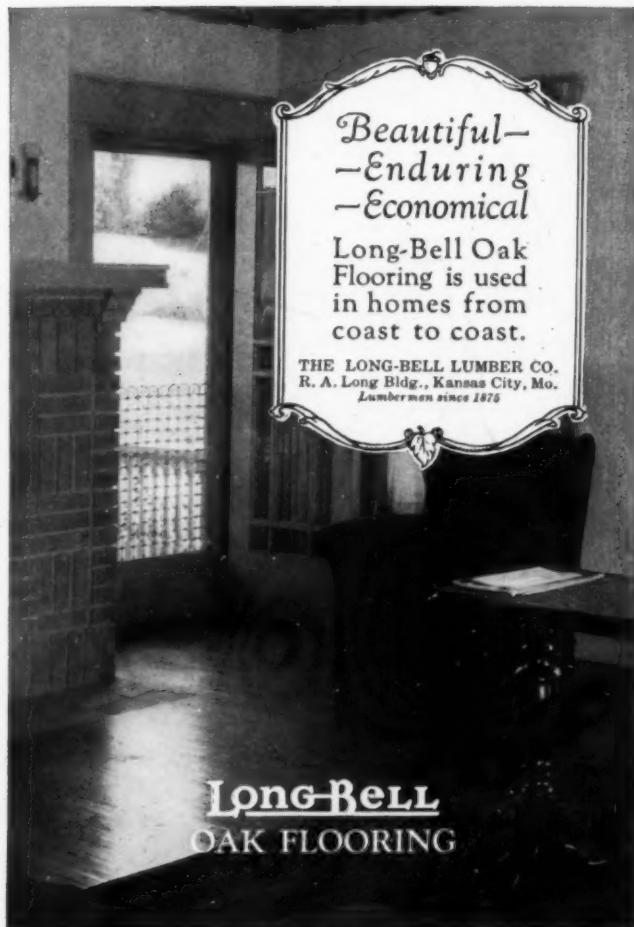
These rings, in turn, produce the fine even grain and uniform texture indicated by the lines (B), typical of all Ritter Oak Flooring, Fig. 1 manufactured exclusively from Oak timber grown in the Appalachian.

To be certain of getting the most beautiful Oak floors, specify "Ritter Appalachian Oak Flooring." Send for valuable Oak flooring facts. See page advertisement in June 5 American Architect.

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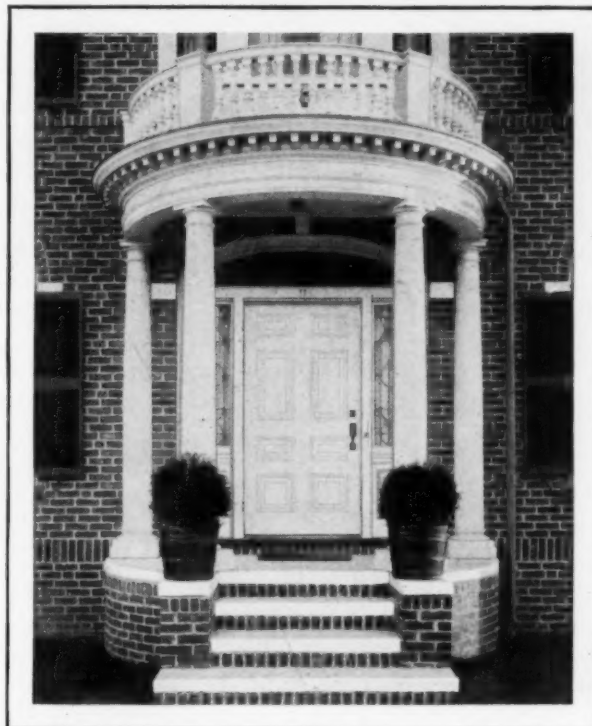
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OAK FLOORING

STABILIZED BY KOLL



LOCK-JOINT COLUMNS

**This
architect
insists on
COLUMNS
*of enduring
beauty***



ONCE an architect experiences the disappointment of accepting columns claimed to be "just as good" he will usually, thereafter, insist on the genuine. For example, read this architect's specification:

"Columns and pilasters in connection with the front porch are to be of wood. These are to be plain type as manufactured by the Hartmann-Sanders Company, Chicago, Ill. The contractor shall figure only columns from this manufacturer and furnish satisfactory evidence to the architect that the same are as specified. The square plinth and pilaster bases shall be of cast iron."

Hartmann-Sanders Columns are demanded by discriminating architects because they not only are beautiful and architecturally

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Pondosa Pine 
The Pick o' the Pines



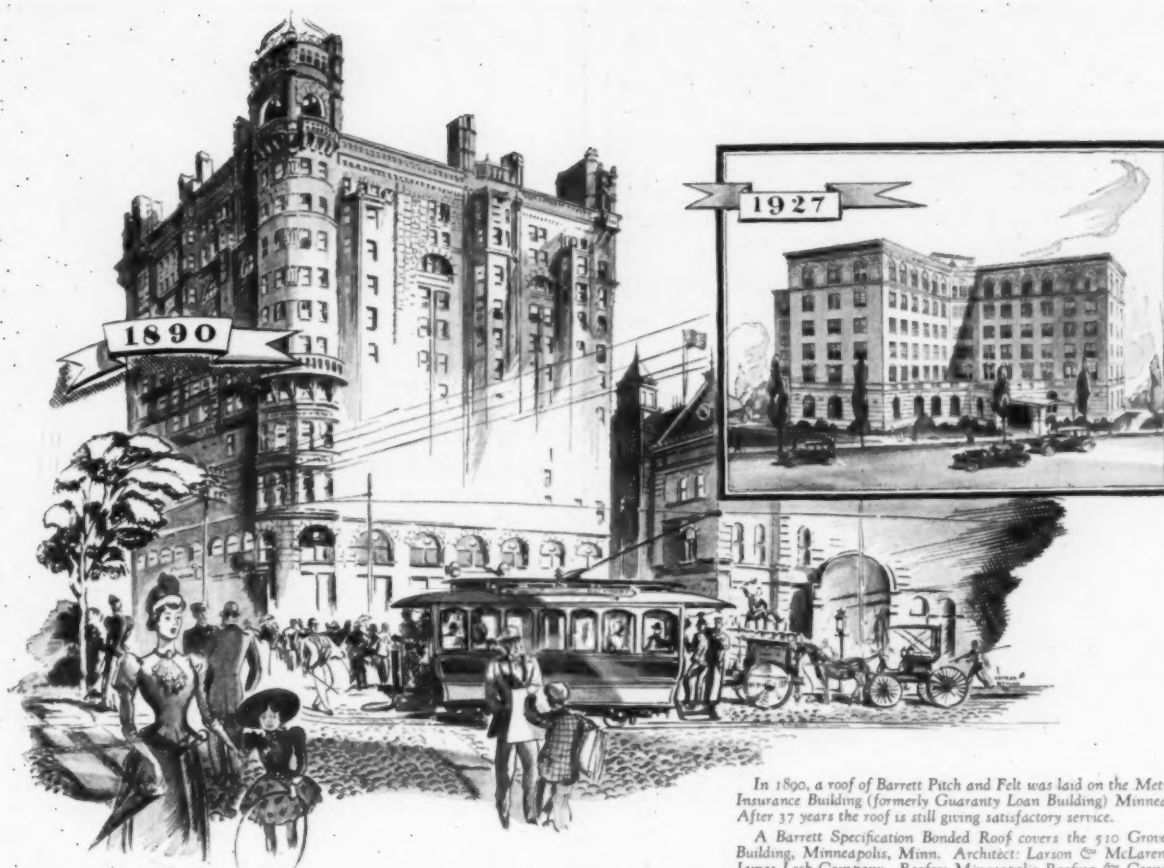
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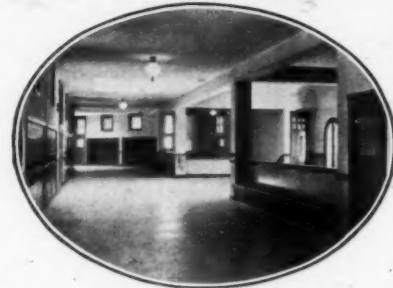
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And Federal roofs are erected by experts from the Federal organization—an additional guarantee of economy as well as speed.

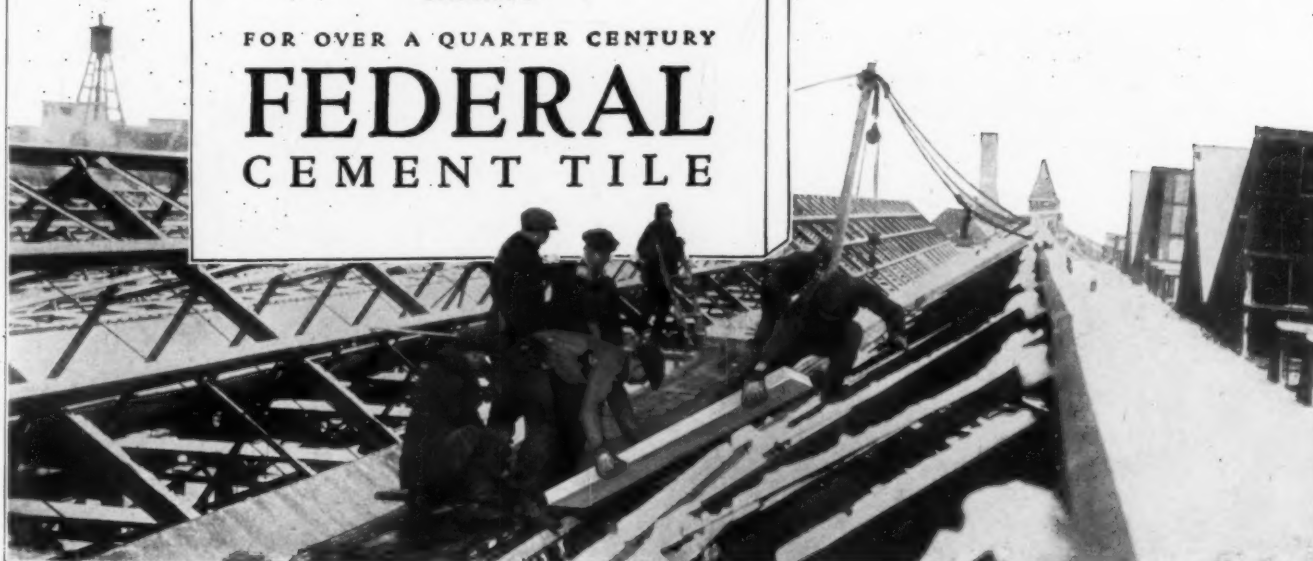
Our twenty-five years' experience in roof construction is at your service. Details on request.

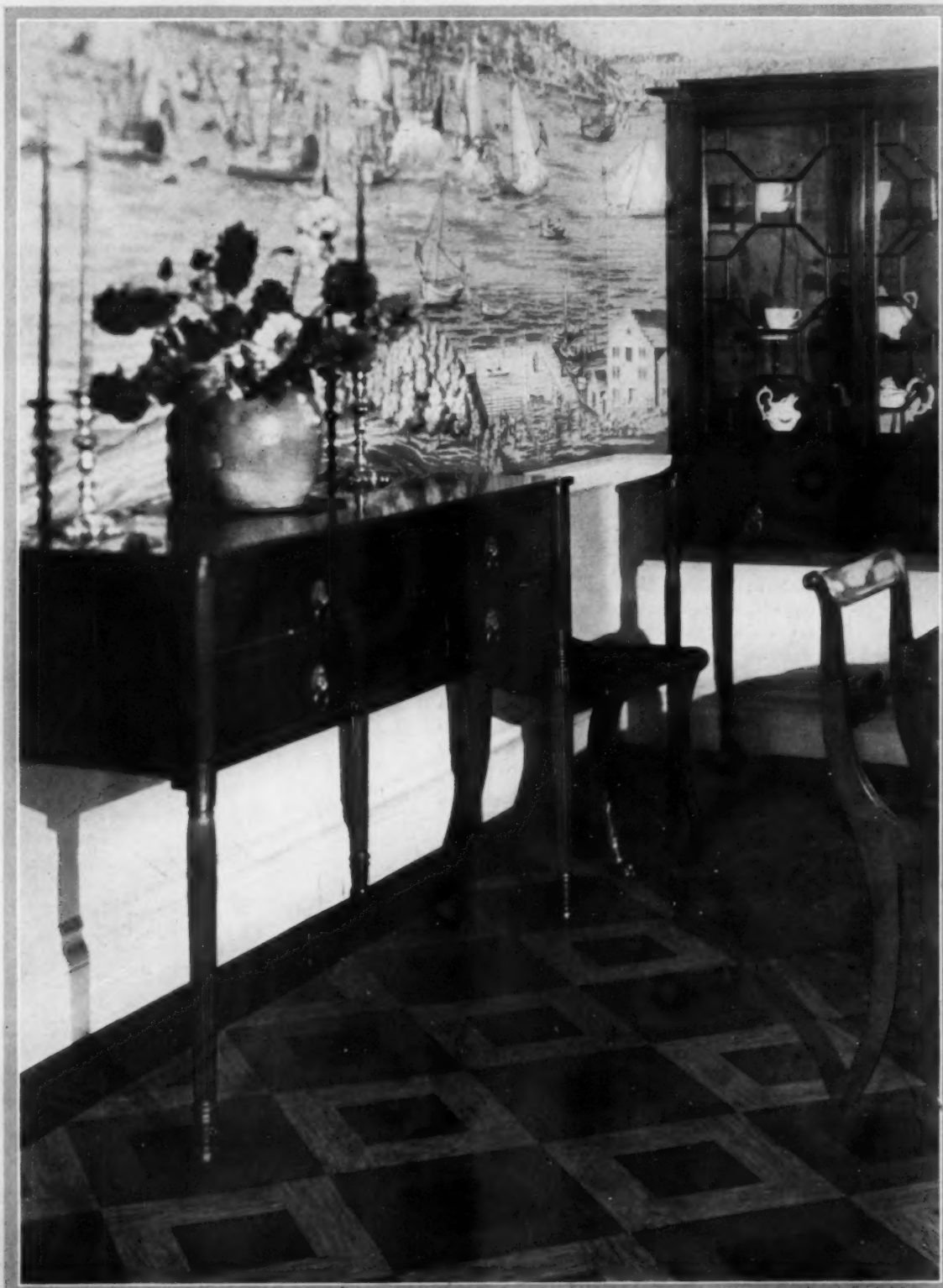
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Can Be Firesafe Without a
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The floor of parquetry inlaid linoleum is an integral part of the decorative scheme of this distinguished dining-room—an effective example of the decorative possibilities of the modern linoleums. There are grades and prices for every purpose. W & J Sloane Mfg. Co., Trenton, N. J.

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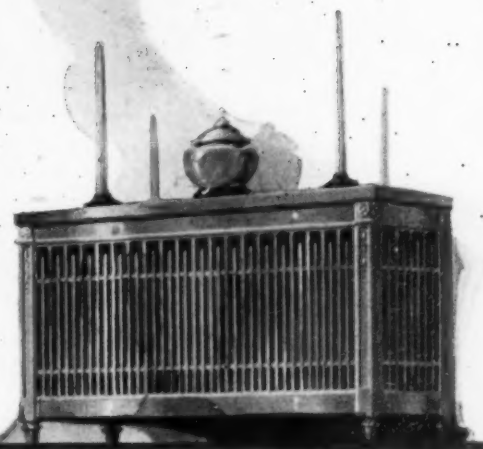
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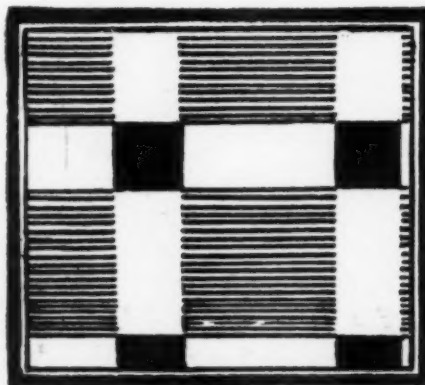


THE crowds at the Philadelphia Centennial in 1876 were stirred with wonder! The Exposition hummed with news of a new floor covering. "It's simply exquisite," exclaimed the charming ladies who saw it. "So easily cleaned—and without beating,"—exulted others. "So restful under foot," was another enthusiasm expressed, as dainty feet trod across it.



The new floor covering was—linoleum—and Wild's Linoleum if you please. It had been recently manufactured in America for the first time, by Joseph Wild. He, it was, who brought from England, Frederick Walton, the inventor of the linoleum, to erect an American

factory at Linoleumville, Staten Island. He it was who alone exhibited the linoleum that stirred the crowds at the Centennial in 1876. He it was in the ensuing years who promoted the linoleum industry in America and initiated every great ad-



Supreme Tile—1560—Pre-destined to great favor by reason of a unique pattern in vivid color-harmonies.

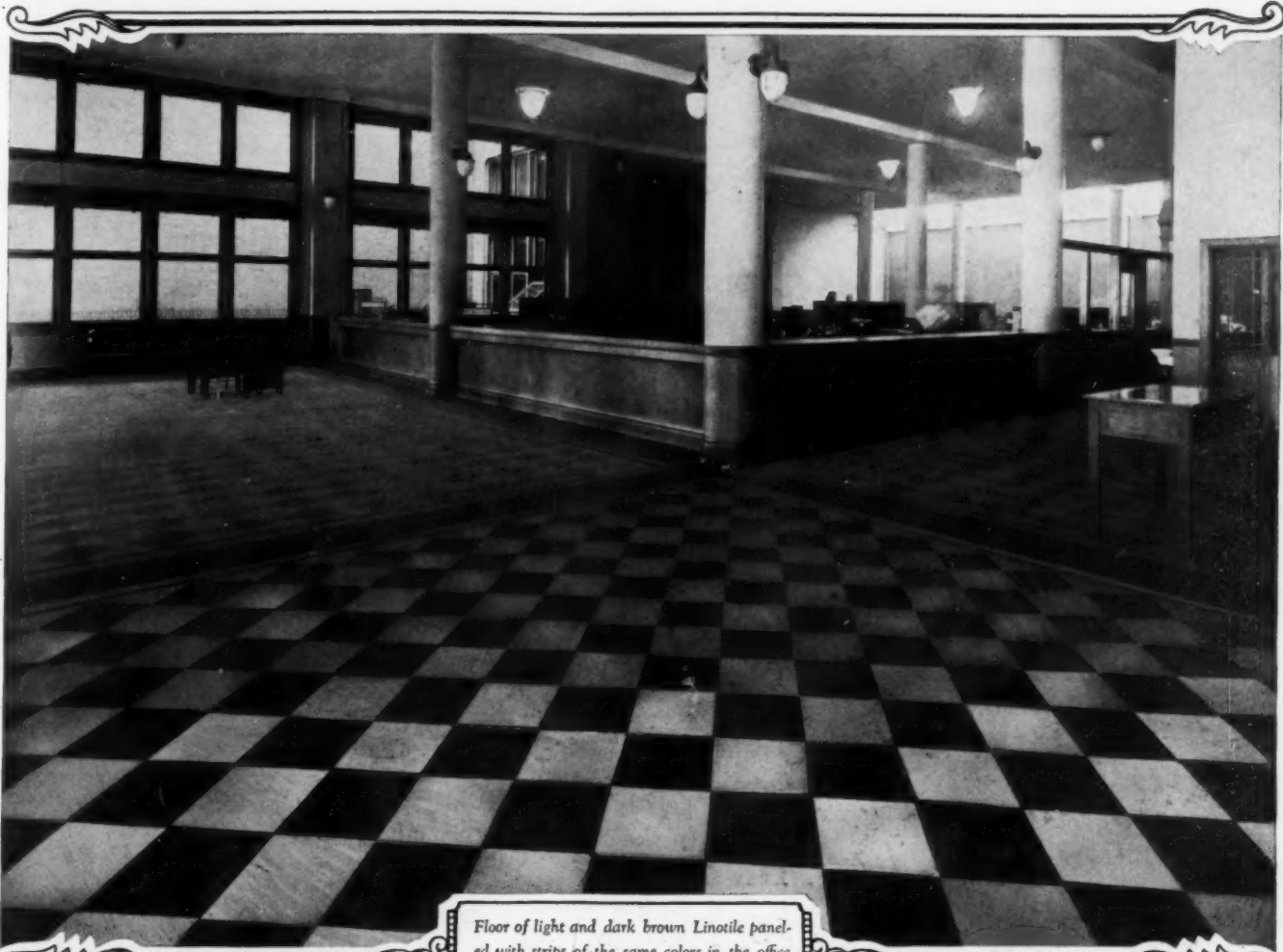
vance in linoleum manufacture and design.



This leadership in style and quality characterizes the Wild's Linoleum you buy today. Thus, the variety of Wild patterns is $2\frac{1}{2}$ times greater than any other high quality linoleum.

If you cannot visit Wild's enlarged showroom, we will help take our showroom to you by mailing you samples of several leading new patterns—Joseph Wild & Co., 230 Fifth Avenue, New York.

WILD'S
LINOLEUM
FOR WEAR
FOR BEAUTY



Floor of light and dark brown Linotile paneled with strips of the same colors in the office of the East Bay Water Co., Oakland, Calif.

Effective Use of Linotile in Panel Design

THE panel effect, which serves to break up the monotony of large floor areas, is very easily handled with Linotile. The sizes of both strips and tiles lend themselves readily to this treatment, and the great variety of colors make it possible to work out very pleasing decorative designs.

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Linotile has a tough, resistant texture that "stands up" even at such points of concentrated traffic as doorways and counters with little evidence of wear even after years of service. It is dustless, easily cleaned and needs no refinishing.

A sample of Linotile and a copy of the book, "Linotile Floors for Public and Semi-Public Buildings" containing full information and specifications, will be mailed on request. Address Armstrong Cork & Insulation Company, 132 Twenty-fourth Street, Pittsburgh, Pa.

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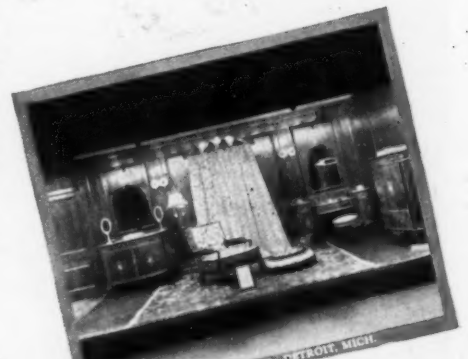
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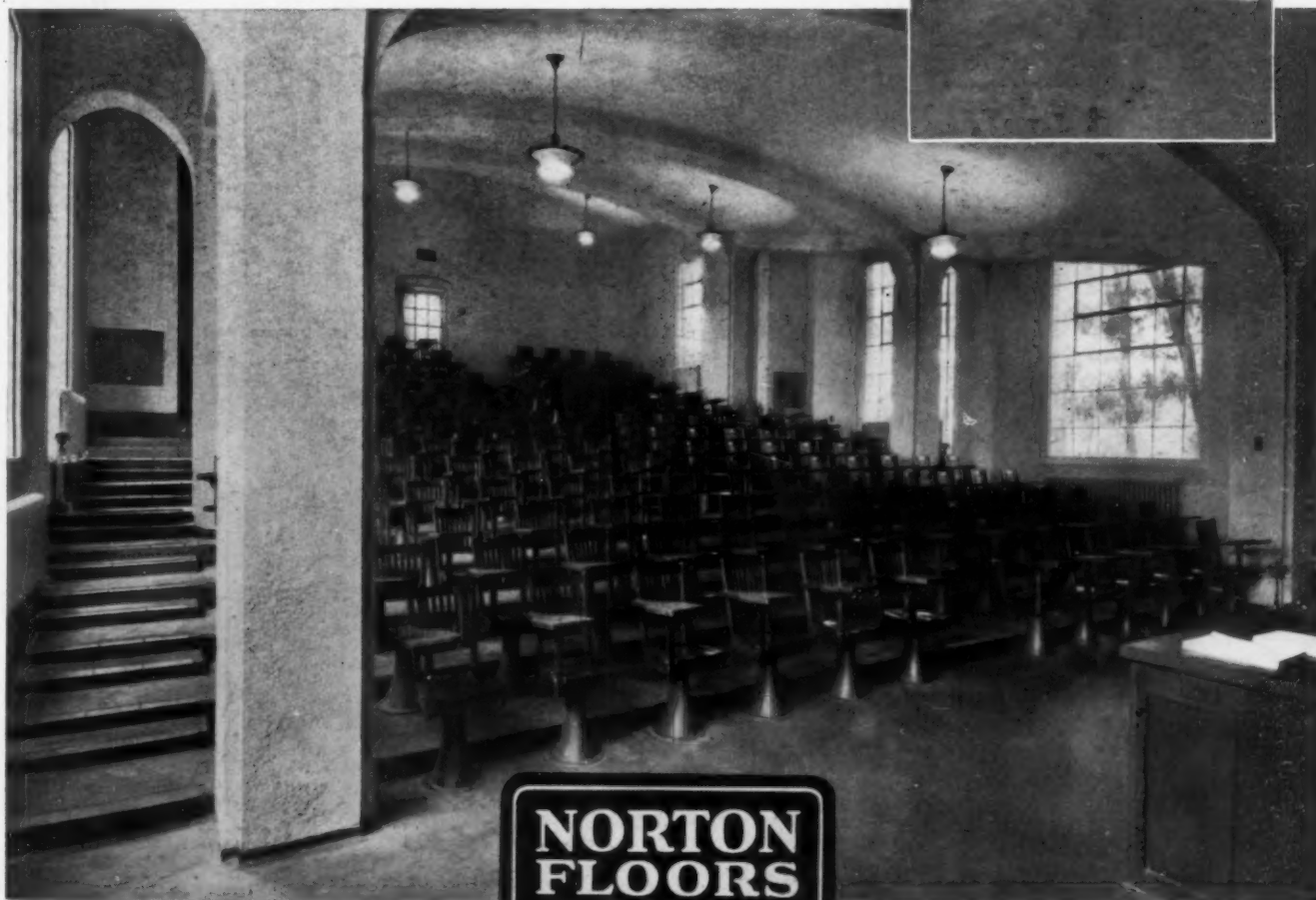
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R-r-r-r-r-ing goes the closing bell. The girls swarm from their seats. They pour down the aisles. And the hustling feet are protected against slipping for each step in the lecture hall of the new Botany Building has a nosing of Alundum Stair Tile.

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Botany Building, Wellesley College,
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**NORTON
FLOORS**
Alundum Tiles, Treads & Aggregates

Day & Klauder, Architects,
Philadelphia, Pa.



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In St. Louis, the majestic Southwestern Bell Telephone Building (Mauran, Russell & Crowell, Architects), is also equipped with Mississippi Polished Wire Glass. Every window above the ground floor has Mississippi protection. Added recognition for the recognized standard in Wire Glass.

"MISSISSIPPI WIRE GLASS"

MISSISSIPPI WIRE GLASS COMPANY, 220 Fifth Ave., NEW YORK
CHICAGO ST. LOUIS

The Shadow Chasers



Ainsworth Archer Model

It's Never Too Late for Correct Lighting

EACH of these three New York buildings was opened at some time within the past ten years. In each of them, tenants squinted, strained, looked closer, wiped tears from smarting eyes.

Light? There was plenty—that is, at the source, glaring, casting sharp shadows on desks and papers. Or, smothered in unscientifically designed globes, it only half-reached the desks, left corners dark and gloomy.

Recently, tenants noted a remarkable improvement—all lighting glassware had been replaced with MONAX Globes (the Ainsworth Archer Model, illustrated above). Offices and corridors were abundantly lighted, sharp shadows softened or entirely disappeared. Even the farthest corners were brightened by the generous flood of illumination. Glare had vanished, for MONAX diffuses light perfectly.

The building management is pleased, because, besides correcting a serious lighting defect, MONAX Globes are economical of wattage. They absorb scarcely any light, do not collect dust, and are easily cleaned. Their thanks to Macbeth-Evans Glass Company, who supplied the globes, and to George Ainsworth of New York who planned the installation.

The planning service of Macbeth Illuminating Engineers is available to any architect or building manager. Address Macbeth-Evans Glass Company, Dept. J., Charleroi, Pennsylvania.



*Central
Building*



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and Natuagel
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MONAX GLOBES

for Better Lighting



Every Window a Source of Health

*when the home is glazed
with this
Ultra-Violet Ray Glass*

QUARTZ-LITE is a clear, flat glass of high quality and brilliant lustre, appropriate for the finest residences. It will enhance the attractiveness of any building in which it is used.

And yet QUARTZ-LITE costs less than plate glass and but little more than ordinary window glass. It is so low in price that it can be used for general glazing purposes—only 50c a square foot.

A building glazed with QUARTZ-LITE is a comfortable place in which to live or work. With this wonderful new glass in the windows, much of the ill health that follows our dreary indoor winter season is avoided, for QUARTZ-LITE brings into the rooms nature's own tonic—the ultra-violet rays of sunlight. These health-giving rays flood the interior through QUARTZ-LITE GLASS, and stimulate everyone physically and mentally. QUARTZ-LITE brings outdoor health indoors every day of the year. Windows glazed with QUARTZ-LITE GLASS transmit a greater volume of ultra-violet rays—the health rays of sunlight—more daylight and more of the warmth of sunlight than is possible with other window or plate glass.



QUARTZ-LITE is so called because it contains the highest percentage of pure quartz found in any clear glass used for windows. QUARTZ-LITE GLASS transmits a recognized effective range of the ultra-violet rays of the sun necessary for heliotherapy.

The results of scientific investigations by eminent scientists attest these facts.

QUARTZ-LITE can be used to great advantage in homes, office buildings and industrial plants. Apartment buildings and dwellings glazed with QUARTZ-LITE GLASS can be rented or sold more readily. Leading glass dealers everywhere handle QUARTZ-LITE. If your dealer does not have it, write direct to us. Mail the coupon below for specification sheet and description of this remarkable ultra-violet ray glass.

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The Ultra-Violet Ray Glass

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*World's Largest Producer and Pioneer Manufacturers
of Machine-Made Window Glass of the
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FLAT-DRAWN CLEAR SHEET GLASS

There is no finer glass for windows than LIBBEY-OWENS "A" quality flat-drawn sheet glass.

Made by an exclusive process, it is uniform in thickness, beautifully clear, with a brilliant sparkling lustre, and absolutely without bow.

Each light of LIBBEY-OWENS "A" quality glass is especially selected. Twice inspected and twice graded to insure its measuring up to our exacting standards, it represents the very

best glass for windows we are able to manufacture.

To protect its brilliant lustre, LIBBEY-OWENS "A" quality glass is packed with water-marked paper between the lights, and to enable you to identify this superior glass, each individual light bears the manufacturer's label.

Specify LIBBEY-OWENS "A" quality flat-drawn clear sheet glass for windows —and provide for your clients the glazing perfection this superior glass makes possible.



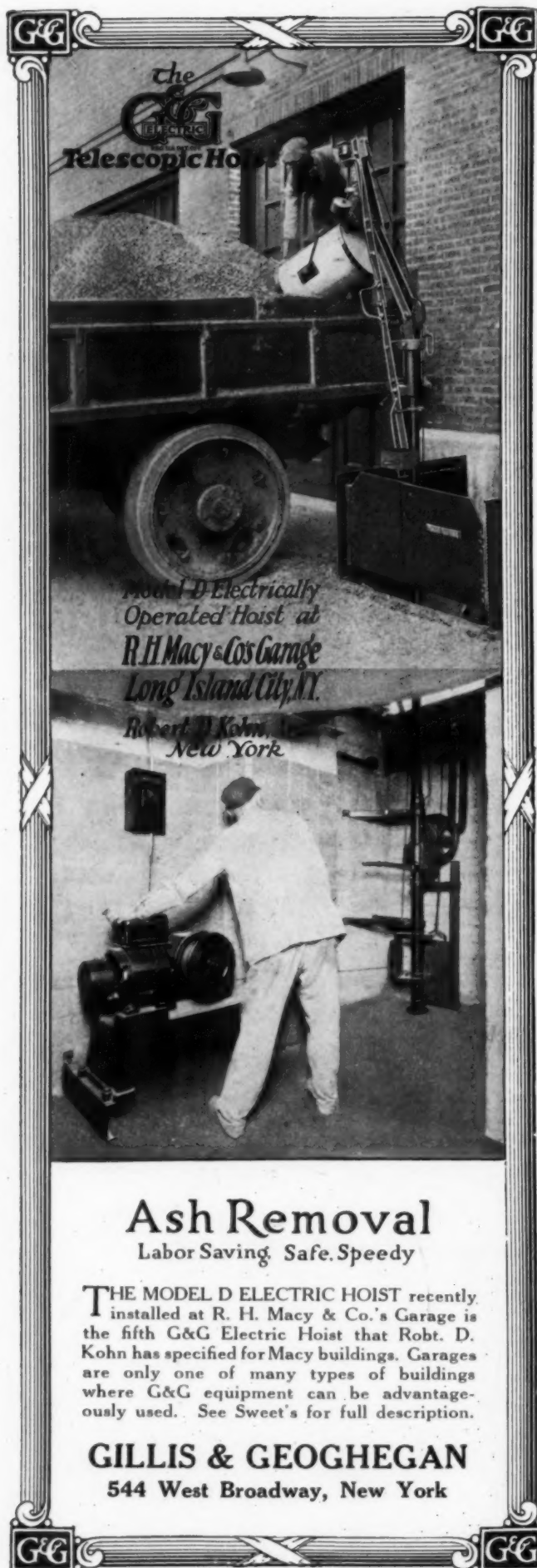
A national advertising campaign in the Saturday Evening Post is teaching the public to demand quality glass for windows —and to identify superior glass by its name—LIBBEY-OWENS.



THE LIBBEY-OWENS SHEET GLASS CO.
TOLEDO, OHIO

LIBBEY-OWENS FLAT-DRAWN CLEAR SHEET GLASS FOR WINDOWS

Distributed Through Representative Glass Jobbers and Used by Sash and Door Manufacturers Everywhere



**The
G&G
Telescopic Hoist**

*Model D Electrically
Operated Hoist at
R.H. Macy & Co's Garage
Long Island City, N.Y.
Robert D. Kohn,
New York*

Ash Removal

Labor Saving. Safe. Speedy

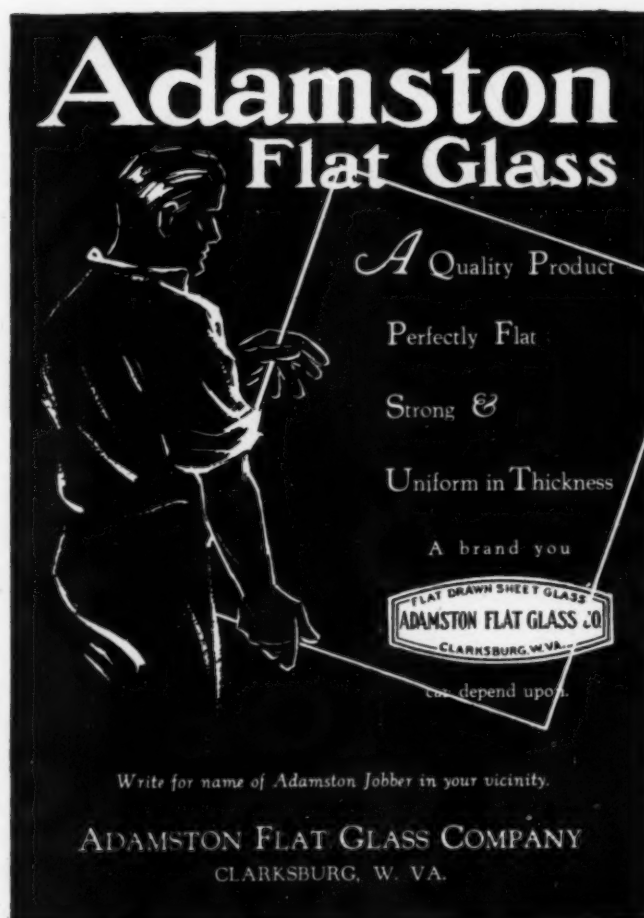
THE MODEL D ELECTRIC HOIST recently installed at R. H. Macy & Co.'s Garage is the fifth G&G Electric Hoist that Robt. D. Kohn has specified for Macy buildings. Garages are only one of many types of buildings where G&G equipment can be advantageously used. See Sweet's for full description.

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the most widely used,
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A Quality Product

Perfectly Flat
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can depend upon.

Write for name of Adamston Jobber in your vicinity.

ADAMSTON FLAT GLASS COMPANY
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A typical CELESTIALITE installation in one of the Scientific American offices

The Modern Trend in Architecture

How times are changing! Twenty years ago the business office was a gloomy place. Men were destined to toil under drab conditions. Today the business man demands that his office be one harmonious unit of dignity and beauty. Entrances, reception rooms, all are designed to appeal to man's aesthetic sense.

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CELESTIALITE, the *three layer lighting globe*, throws a soft, white light that accentuates all of the minute niceties that the architect so carefully specifies.

The three individual layers of glass (see illustration on left) diffuse and

Many of the best architects are specifying CELESTIALITE

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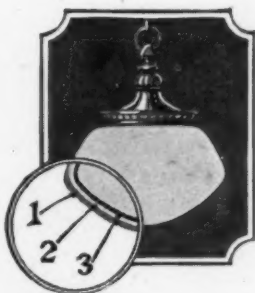
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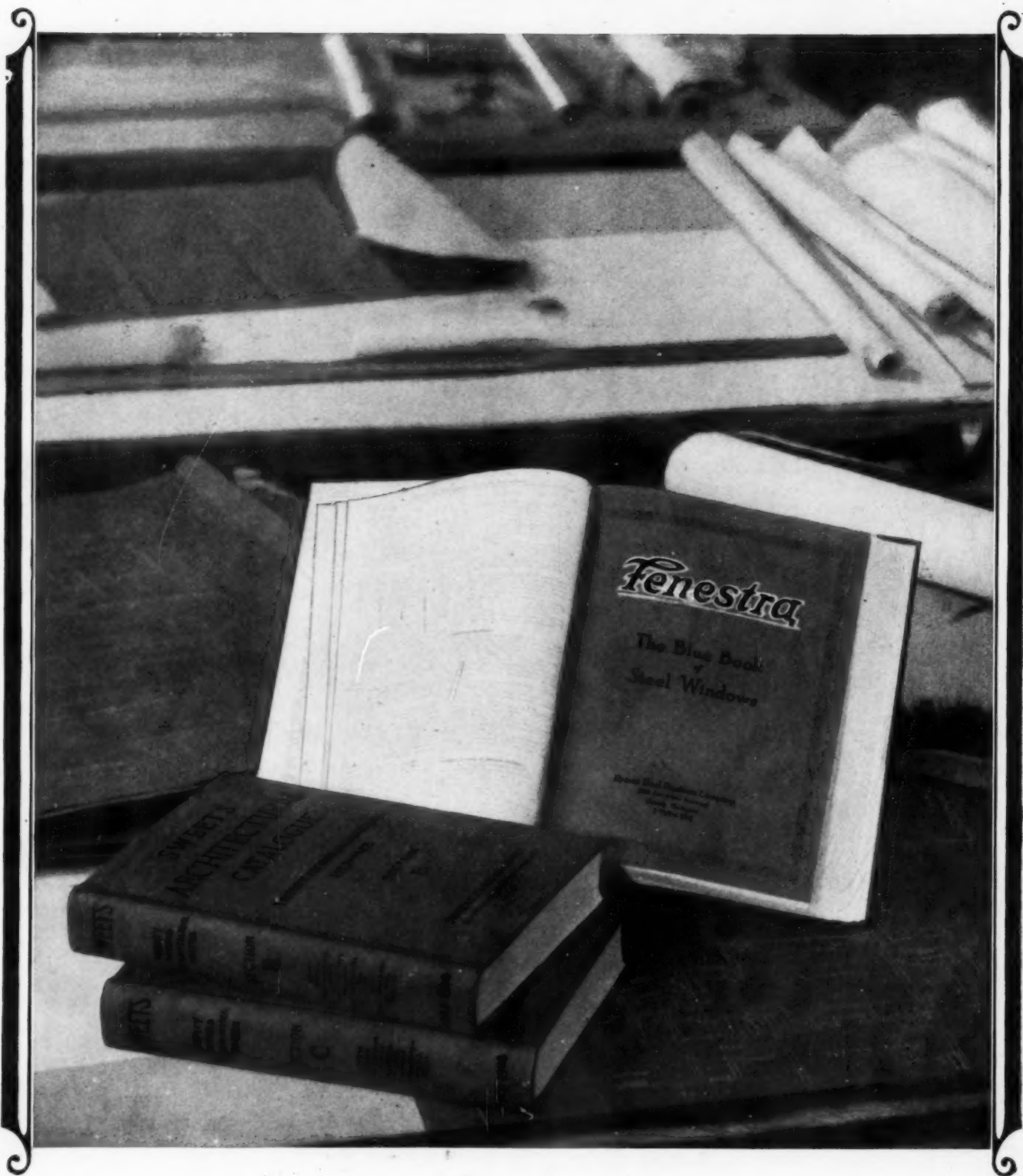
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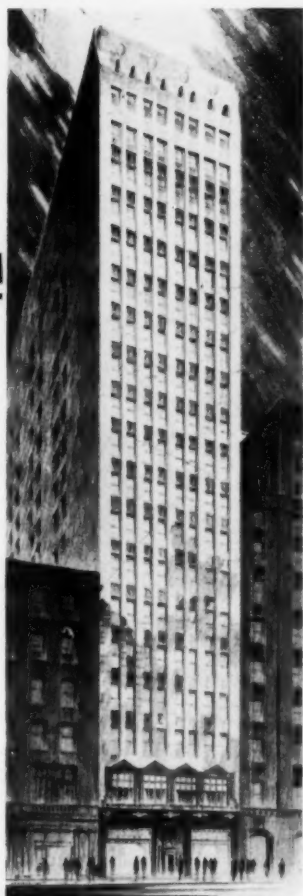
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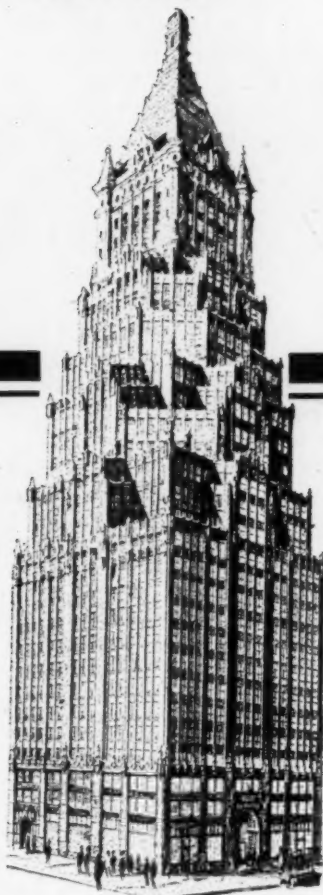
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Architectural **BRONZE**
STORE FRONT CONSTRUCTION



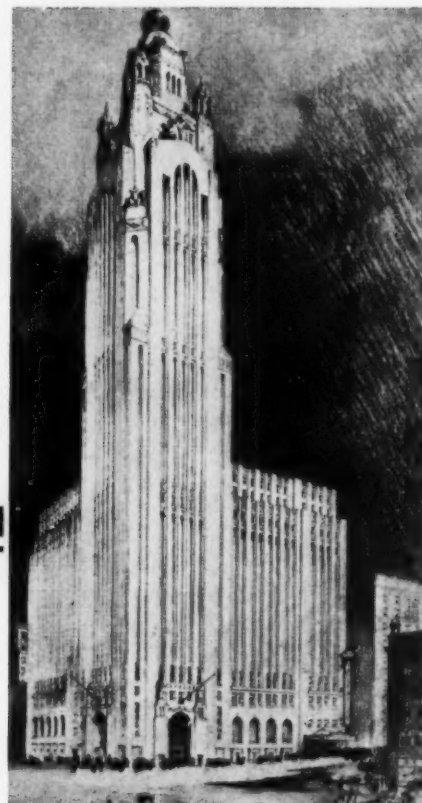
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Architects will be interested in the unique method of holding the plate firmly, uniformly and safely in all Davis sash and bars. There is nothing else like it. The heavy solid bronze assures unusual strength. All glass is set from the outside—no putty or plastic cement necessary.



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McKinley University Hospital
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Du Pont Tontine was chosen exclusively to shade the windows of the recently completed McKinley University Hospital of the University of Illinois. Charles A. Platt, 101 Park Avenue, New York and James M. White, of Champaign, Ill., Architects.

NO one knows better than the architect that everyday hospital conditions call for unusual qualities in a window shade. The service is unceasingly severe—abuse frequent.

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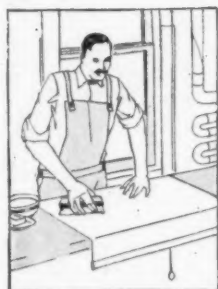
WASHABLE. All dust, grime and finger-marks are easily removed with soap, hot or cold water and a brush.

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THE WASHABLE
WINDOW SHADE

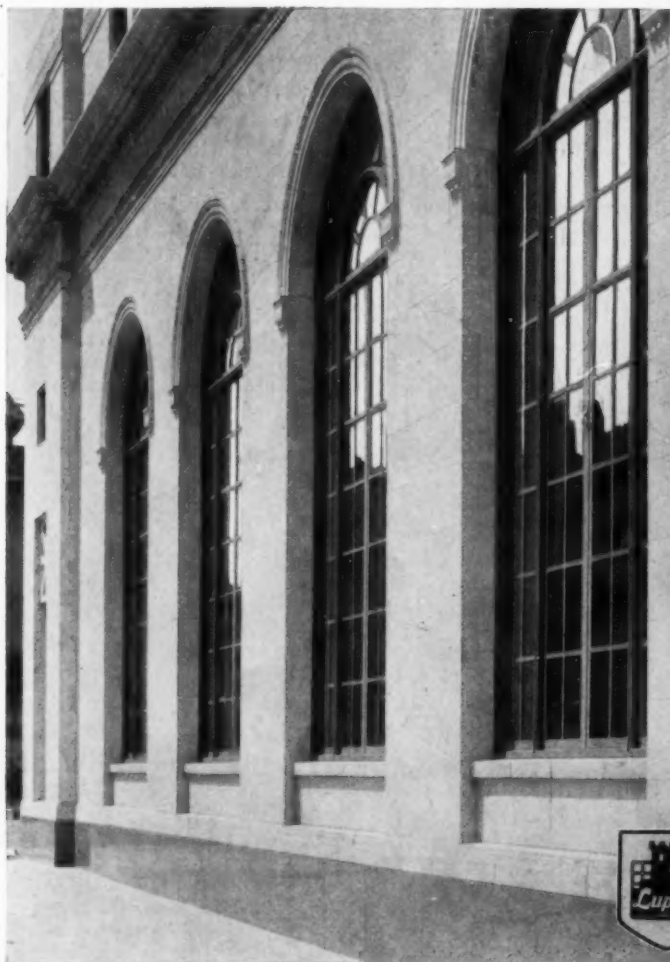
These are the highest grade steel windows for monumental buildings

In Main Street, as in the Metropolis, the bank building is frequently the chief architectural work in its community.

Is it not significant that Lupton Heavy Casement Windows are so generally specified for banks? The dignity of their design and the excellence of their construction commend these high grade steel windows to the architects of banks and of other fine buildings throughout the country.

Lupton Heavy Casements are made in several standard types and can be finished to suit any size or shape of opening. Let us figure on your requirements.

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LUPTON WINDOWS *of Steel*

CONQUERED -

*the wear of thousands of handlings
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FOR now they are "Crodon"-plated—the metal washstand fittings in the busy Grand Central Terminal, New York.

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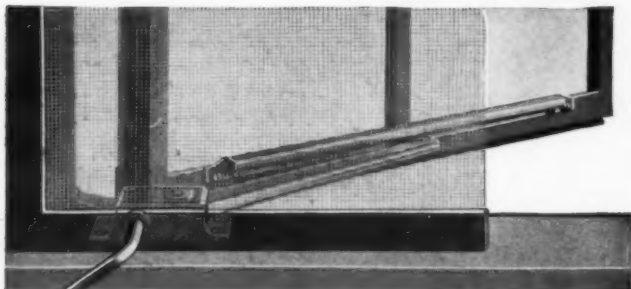
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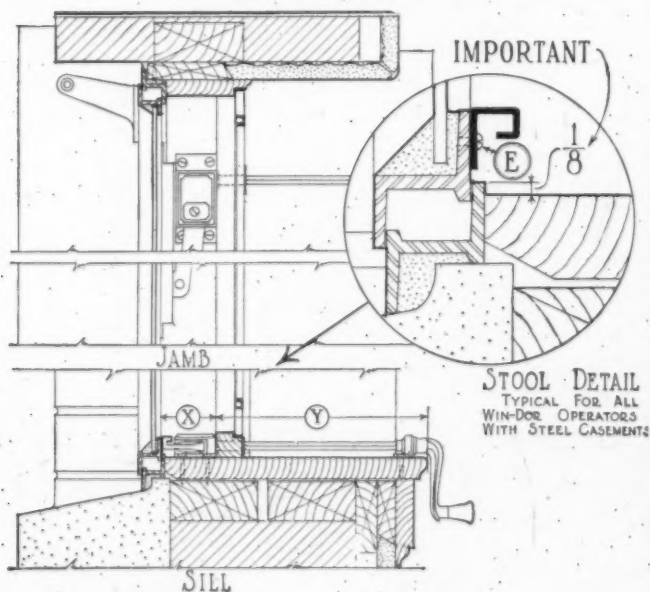
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For full line see Sweets pp. 1852-1855.

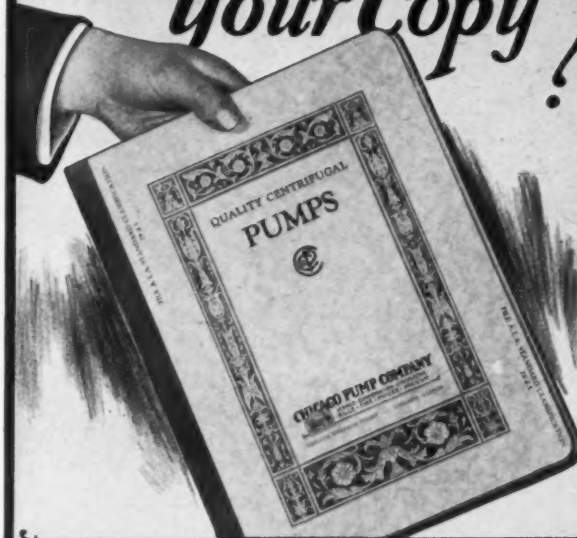


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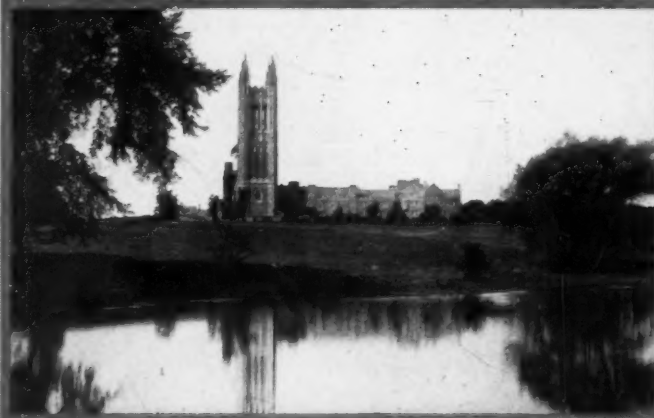
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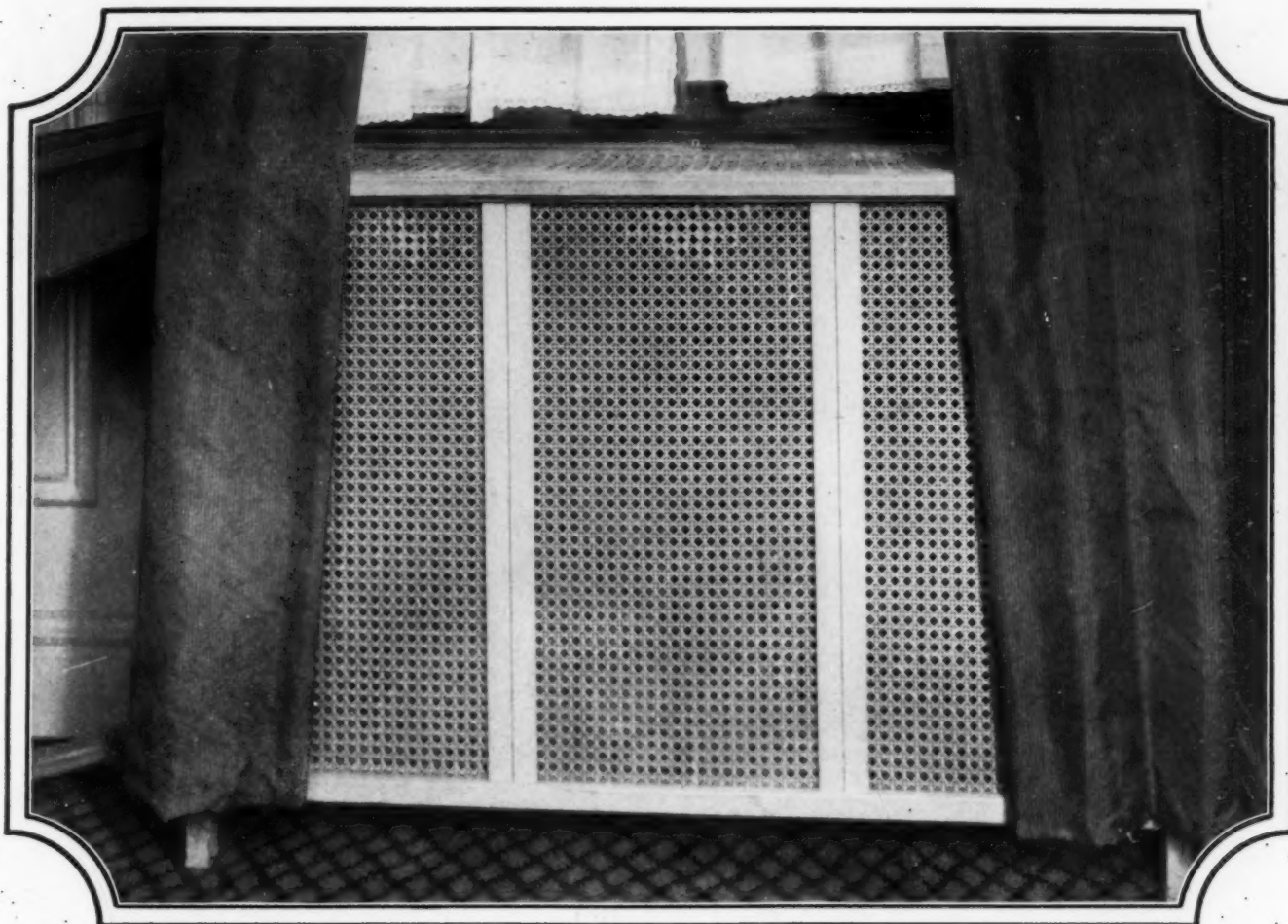
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Throughout this Country and Abroad Metalace is
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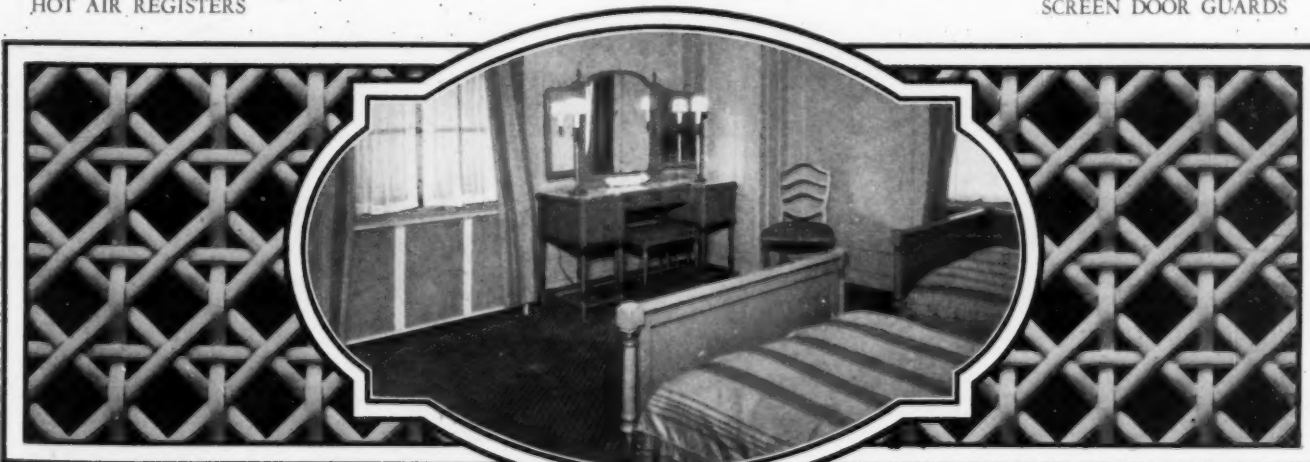
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The Satis is Best

RALPH HITZ

OFFICE OF THE MANAGER
HOTEL GIBSON
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August 5th, 1927.

Mr. L. W. Kaiser, Pres.,
The John Van Range Co.,
Cincinnati, Ohio.

My dear Mr. Kaiser:

The Tiffany in the Kitchen Equipment line.

The above tells the story of John Van Range. For the past several years I have had the pleasure of doing business with you in different parts of the country, and particularly since my coming here-completely remodelling the Coffee Shop Kitchen, and installing the new Sandwich Grill. As each job has been completed, I have marvelled at the finished, efficient appearance and the quality of the material and workmanship.

My reason for writing you at this time is to particularly commend the close co-operation and efficient manner in which the installation was handled by your Chief Engineer, Mr. Forbriger.

Assuring you it will always be a pleasure to recommend "The Tiffany of the Kitchen Equipment World," to my friends and other hotel managers, I am

Very truly yours,

Ralph Hitz
Manager.



RH
ms

The HOTEL GIBSON

Cincinnati, Ohio

Mr. RALPH HITZ, Manager

Cincinnati's famous hotel has long
been a user of Van Equipment.



Sandwich

faction of Every Van User Expressed by Mr. Hitz ~ ~ ~

IF you are considering buying kitchen equipment Mr. Hitz' letter will interest you. He says about Van Equipment what you will want to say about the equipment you buy! You are sure to enjoy this same enthusiasm if you bring your equipment problem, large or small, to the House of Van.

For many, many years now we have been building Van Equipment to our own high standard. We have engineered it with the most expert skill available and installed it with every care for the interest of the owner. The result is a record of satisfied users that stretches back through the years, and continues to multiply as days go on.

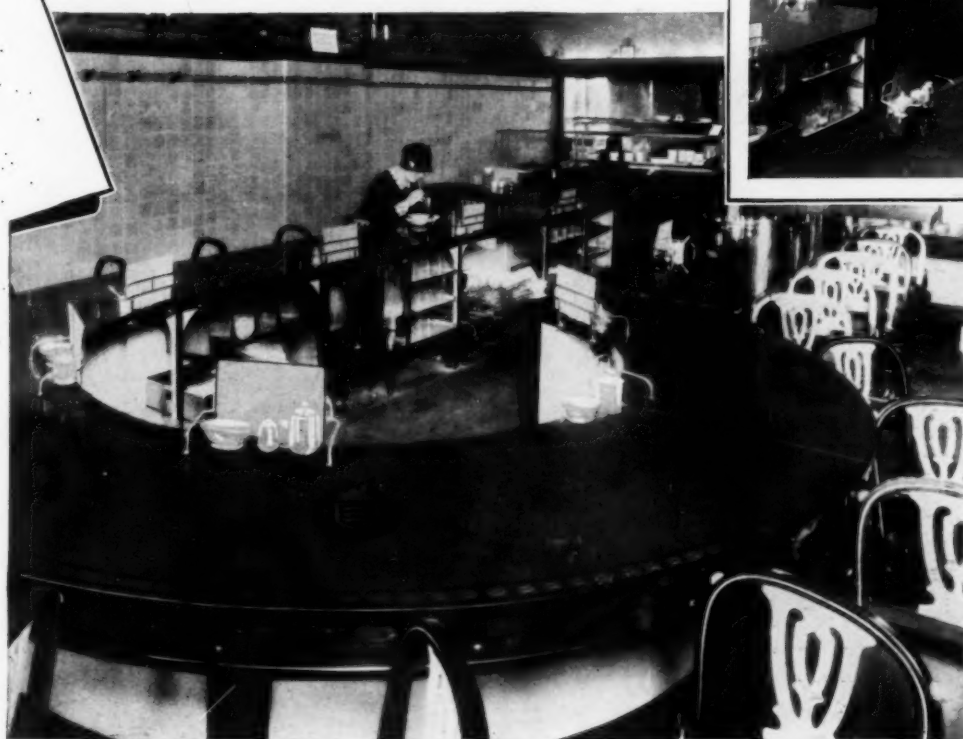
We urge you to try Van Equipment for yourself. If not a whole kitchen, then any item will prove the dependability and economy of the Van line. We'll gladly send specifications for anything that interests you.

The John Van Range Co.
EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD
Cincinnati

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NEW ORLEANS

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Grill ~ Hotel Gibson ~ Cincinnati, Ohio.

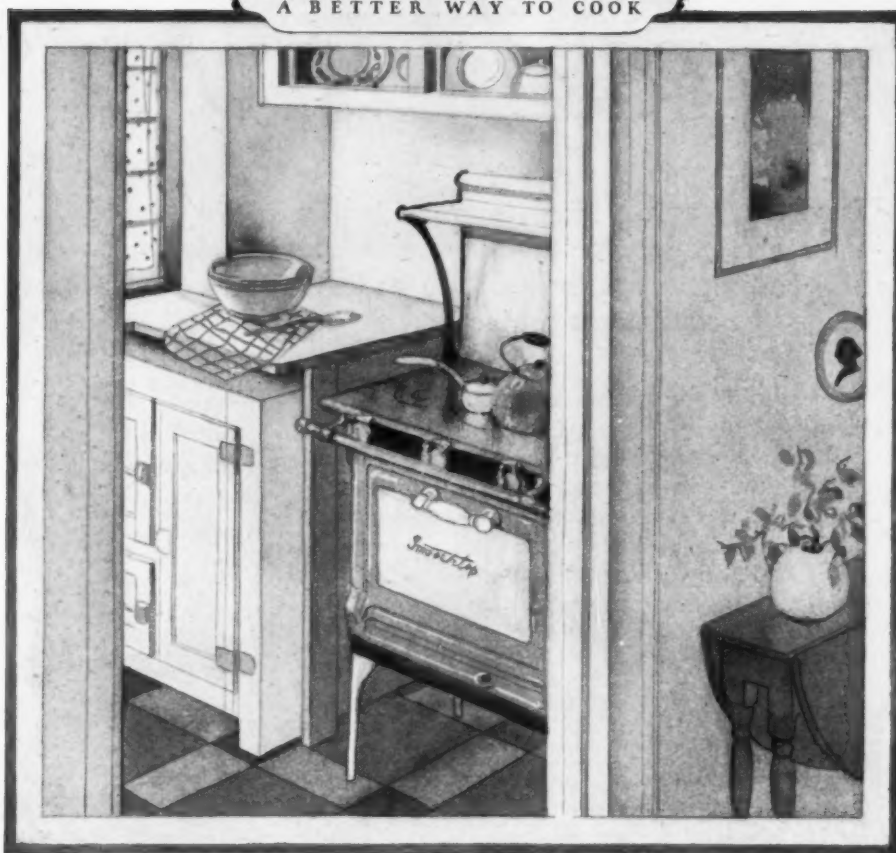
PROVIDING the equipment when, where and how it is wanted is a guiding principle with Van Engineers. They serve you as you wish to be served—providing the right equipment to meet your needs—cooperating with you to secure the utmost efficiency and economy.

This Sandwich Grill of the Hotel Gibson, Cincinnati, is a recent example of their work.

Smoothtop

GAS RANGE

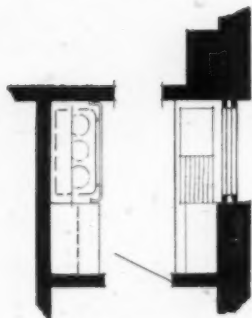
A BETTER WAY TO COOK



The Manor, Tudor City
New York

"Tenants are demanding Smoothtops"

— John A. Olson



The kitchen plan

THIS demand is again answered in The Manor, the new Tudor City Second Unit apartment group. The Manor is another towering proof that "the smarter East Side" of New York City is expanding farther eastward. It embodies throughout the latest advances in apartment house design.

"It therefore embodies Smoothtops," said John A. Olson, President of the famous Fred F. French Company, Architects, Engineers and Builders, who planned and constructed The Manor. "More and more prospective tenants for French-designed dwellings are demanding Smoothtops in the kitchens. Happily, this is in accordance with the French plan—which is to bring about

the utmost in dwelling convenience and comfort."

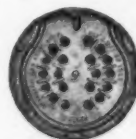
Authoritative opinion, such as Mr. Olson's, knows that a Smoothtop *does* "dress up" the kitchen. That it *does* save space and allow more light to enter. That it *does* give the best in cooking service. Which is undoubtedly the reason why Smoothtops are fast becoming standard in all French kitchen specifications.

To meet this general demand our Building Service Department has collected data which is of practical help in all problems of kitchen planning. Please feel free to make any inquiry. Standard Gas Equipment Corporation, 18 East 41st Street, New York.



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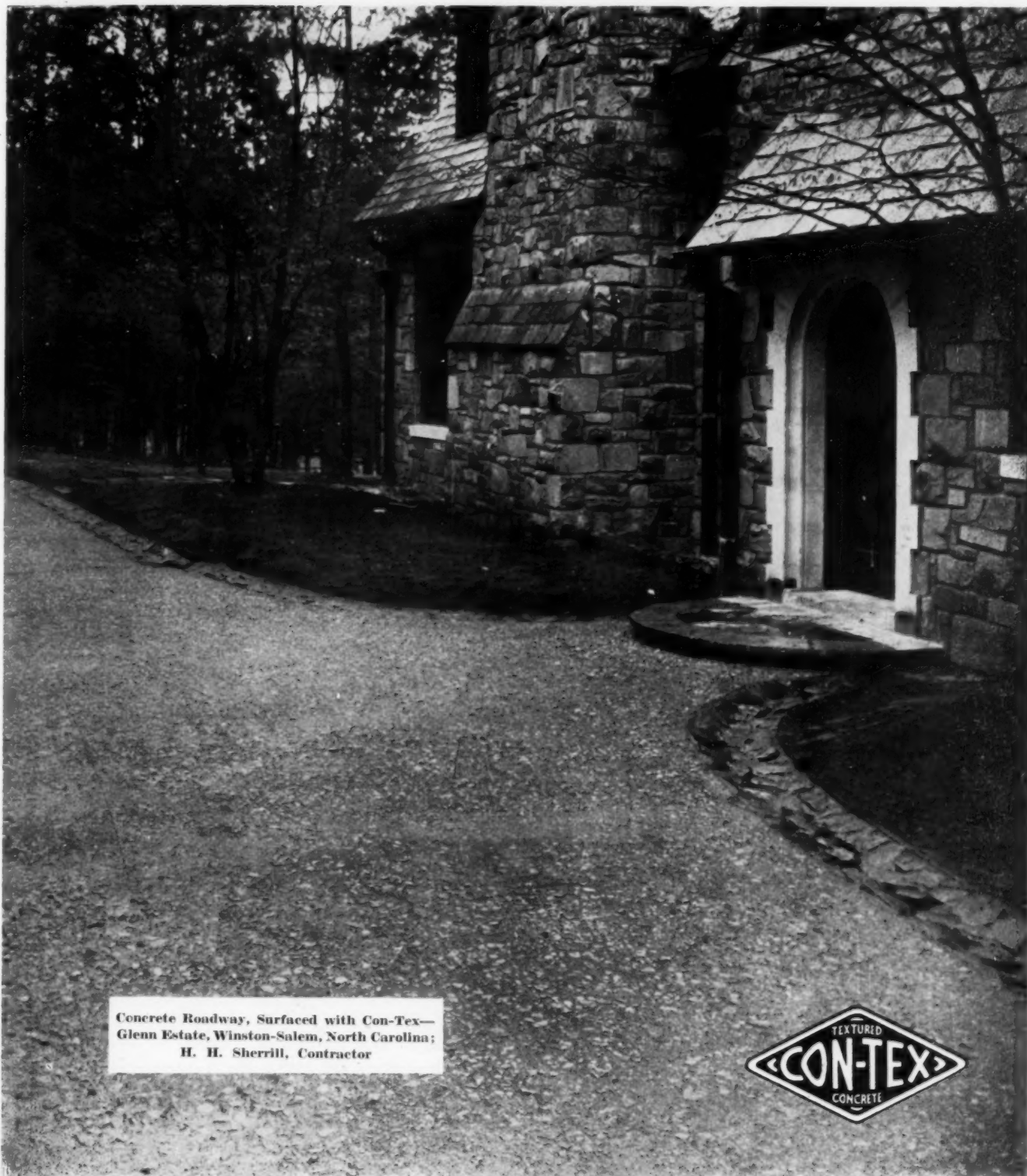
There is only one Smoothtop and it
is fully protected by patents.



The reason why Smoothtop "works
so well" is the aeration plate attached
to each burner.

Pacific Coast Distributor: Northwest Gas & El. Equip. Co., Portland, Ore., San Francisco, Los Angeles

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Concrete Roadway, Surfaced with Con-Tex—
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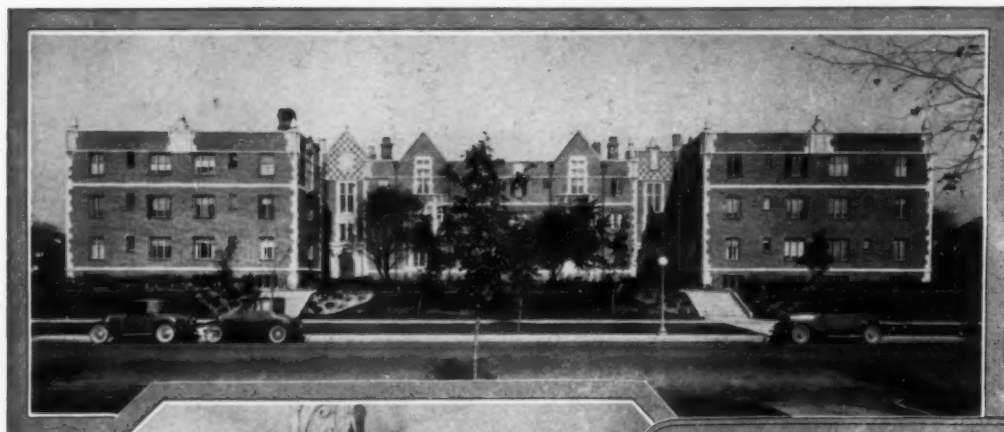
CON-TEX Treated Roadways have the permanence and stability of concrete plus the appearance and color harmonies of clean compacted stone.

Con-Tex is a material that "improves and extends the uses of concrete." The Con-Tex Surface Treatment is simple

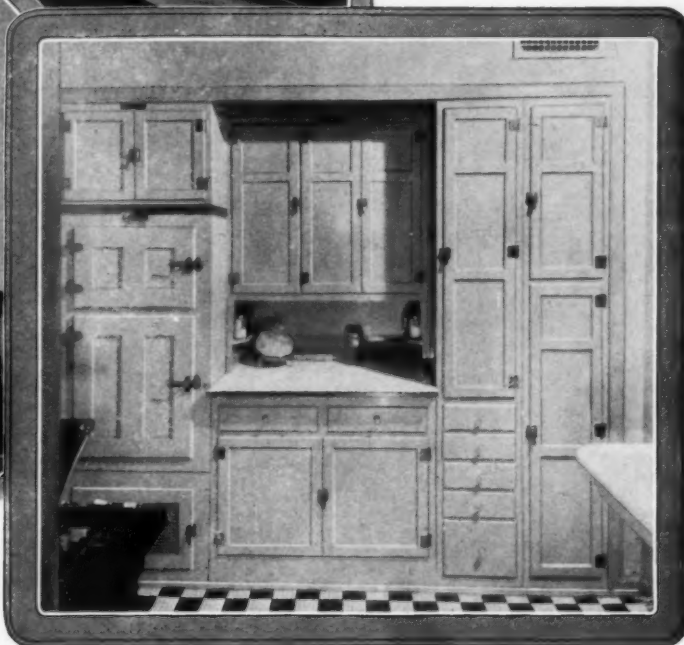
and inexpensive, whether for finished surfaces or for bond surfaces.

Tell us your problems and let us send you detailed information.

CONCRETE SURFACE CORPORATION
342 Madison Ave., New York



Oxford Gables Apartments, 38th and Washington Blvd., Indianapolis, Indiana. Equipped with McDougall Domestic Science Built-in Kitchen Units. Architects: Pierre and Wright. Builders: A.V. Stackhouse Company.



Keeping the client *sold!*

When it comes to getting final approval of plans and specifications for the home or apartment building, and then keeping the client sold, it's largely a matter of pleasing the woman. And the surest way to do that is to design a kitchen that meets the modern demand for built-in beauty, convenience and space economy.

Designed and constructed by specialists in kitchen planning, McDougall Domestic Science Built-in units are unexcelled in high

quality of material and workmanship, and their installation is guaranteed to meet your most exacting requirements. In fact, McDougall has never lost, during all its thirty-five years of pioneering leadership, a single customer because of inadequate service.

Write today for detailed information about our Architectural Service Bureau. A copy of our illustrated catalogue will also be sent on request. There is no obligation.

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100,000 *Dollars*
worth of electric refrigerators
and
every one a Frigidaire

HERE we picture a section of Tudor City—one of the world's largest and most famous dwelling projects. A magnificent development structure covering several New York blocks.

Into Tudor City go one hundred thousand dollars' worth of Frigidaires!

Why was Frigidaire the choice of Fred F. French Company, Tudor City builders, over the many other makes of electric refrigerators?

Not by chance. An investment of one hundred thousand dollars is not made lightly. Competing makes were tested and compared. Intensive research was conducted by leading engineers. Laboratory methods of investigation were employed.

All proved Frigidaire superior to the others. Its absolute dependability. Its longer life. Its lower operating cost.

**Fred. F. French Company and Others
Investigate for You**

Your problem, in proportion to investment, is no different than the Tudor City problem. When you buy a single electric refrigerator you want the greatest value for the least expenditure—and the Fred F. French Company did when they bought one hundred thousand dollars' worth of Frigidaires.

But you can't employ skilled talent to carry on exhaustive research and to make detailed com-

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Big Returns**

The investment in Frigidaire equipment for the apartment buildings you plan pays big returns to the owner. Returns in the form of better satisfied and better paying tenants—lower tenant turnover—lower property depreciation—reduced building and maintenance costs.

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Huge production effects economies that are passed along in lower Frigidaire prices. Now a new Frigidaire, ready to operate from any electric outlet, for only \$180 f. o. b. Dayton. Also reduced prices on other models.

Call at the nearby showroom today. Or write for new booklet and complete information.

FRIGIDAIRE CORPORATION
Subsidiary of General Motors Corporation
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A PRODUCT OF GENERAL MOTORS



What is the Price of a MODERN Step-Saving Kitchen?

WHAT is the price of scientifically developed, soundly built, beautiful kitchen equipment? We invite you to figure it out for yourself—item for item:

Set down the cost of lumber for ordinary cupboards, the cost of their hardware, paint, etc., the cost of labor on them. Then compare the total with the cost of Napanee Kitchen Equipment. You will find the figures to be practically the same. But—

Consider these extras: All hardwood lumber—every inch of it—which protects Napanee Equipment against humid kitchen atmosphere; rust-proof hardware; porcelain top work table; patented easy-fill flour bin; complete 10 piece set of crystal glassware; patented metal bread drawer; handy shelves; sliding trays, sturdy racks, convenient hooks and holders—all arranged to centralize operations and systematize movements as no set of cupboards can.

Is it any wonder that architects and builders are keeping us busy night and day with orders for their fine apartments and lovely homes? They tell us time and again that such apartments and homes rent more readily and sell more quickly because of Napanee equipment.

COPPES BROS. & ZOOK, Nappanee, Indiana.

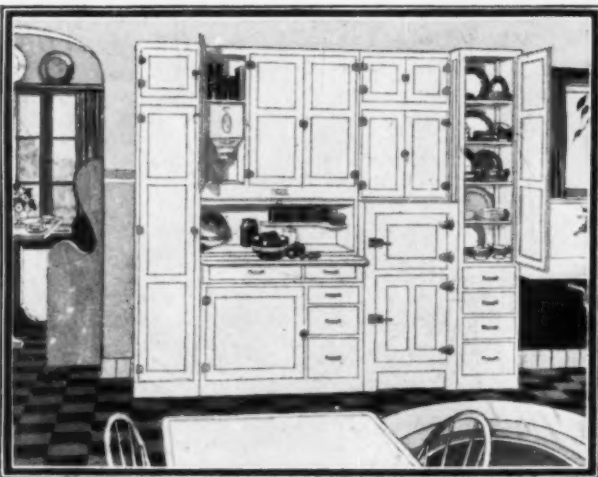
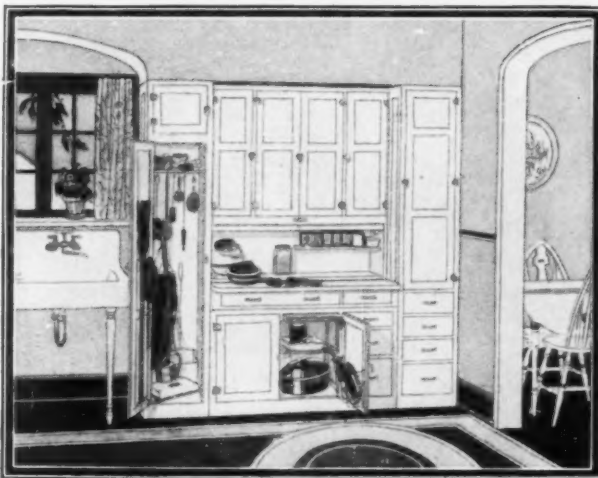
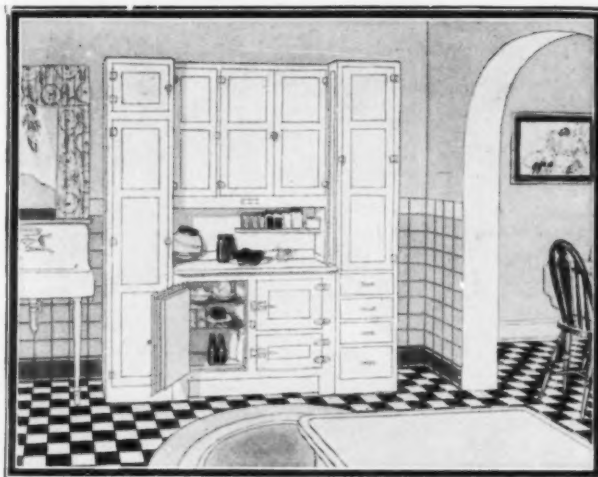
The combination illustrated at the top is made up with a Refrigerator-cabinet 40½ in. wide, a Broom Closet 16½ in. wide and a Dish Cupboard with four drawers, 16½ in. wide. The combination in the middle is made up with a 48½ in. Cabinet, and the same Broom Closet and Dish Cupboard shown in the top combination.

NAPANEE

DUTCH KITCHENET

Built Like Fine Furniture

The combination shown here [at the bottom] is made up of the following Units: a 40½ in. Cabinet, a 24 in. Refrigerator with a Top Cupboard of the same width, a 16½ in. Broom Closet and a 16½ in. Dish Cupboard. The height is 85½ in. The depth is 21 in., except the Cabinet Top which is 12 in., and the Porcelain Top which is 25¼ in.



OUR GOLDEN ANNIVERSARY YEAR

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Nappanee, Indiana
Please send me your catalog illustrating
different styles and sizes of cabinets, cup-
boards, side units, refrigerators, stoves,
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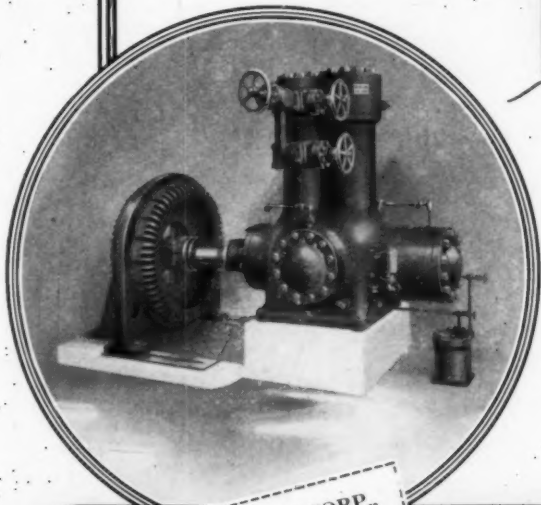
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YORK AIR COOLING AND CONDITIONING SYSTEMS FOR THEATRES

THE Keith Palace, Cleveland, Ohio.

It is significant that this "big time" 3,200-seat theatre has installed the York Carbon Dioxide system of air cooling and conditioning—a system which enables it to guarantee the theatre-goer *entertainment plus comfort*.

The Keith is one of thirty York air conditioned jobs.



The demand for air conditioning, and cooling systems in theatres, hospitals, hotels, industrial institutions, etc., is increasing. On every hand it is conceded that pure, humidified and properly tempered air is conducive to efficiency as well as comfort. The York organization specializes on this distinct phase of engineering and will gladly cooperate with and furnish pertinent data to architects interested in installations of this character. Return the attached coupon for complete information.

YORK ICE MACHINERY CORP.,
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Without obligation on my part,
please furnish me full information
on York air conditioning equip-
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KITCHEN MAID

STANDARD UNIT SYSTEMS



A single wall combination of six separate units

Architects praise the flexibility and construction of these units

To the architect, the wide variety and flexibility of Kitchen Maid Units are vitally helpful factors. No matter what type or size of kitchen is being planned, there are units to cover all its equipment needs. Each unit is complete in itself—may be used alone or in a unit combination.

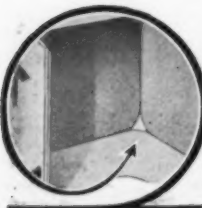
These units are built to the architect's highest ideals of design and craftsmanship. Of carefully selected, carefully kiln-dried woods. With rounded inside corners, smooth doors of five-ply construction, concealed hinges, triple suspension-metal-trolley drawers.

Kitchen Maid Units offer a large list of other important advantages over ordinary kitchen equipment methods. Yet standardization renders their cost installed surprisingly low. Write for catalogue fully describing all the units with dimensional drawings and prices.

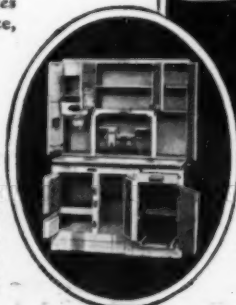
WASMUTH-ENDICOTT CO., 1812 Snowden St., Andrews, Ind.



Representatives in all principal cities
If in Canada, address Branch Office,
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Rounded inside corners and 5 ply smooth door construction—exclusive in Kitchen Maid Units



Broom Closet and Folding Ironing Board Combination.

Left—Compact No. 646—for the modern efficiency kitchen.

A Portfolio on Refrigeration

EVERY architect should have in his files for immediate reference the new portfolio on refrigerators which has just been prepared by the engineering department of McCray.

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Salesrooms in All Principal Cities

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REFRIGERATORS

—for all purposes—

Let Colt Engineers help you plan that Dishwashing Pantry!

NO matter what the capacity or size of the kitchen you are planning, Colt Engineers are at your service—ready to advise you, not only which particular Colt Autosan is best suited for your requirements, but also how the pantry and table layout may be planned for maximum efficiency. May we send you our "Architect's Packet" which gives facts and figures about the entire Colt line from Model "S-1" to the giant "C-3"?

Colt's Patent Fire Arms Mfg. Co.
Hartford, Conn. U.S.A.



COLT AUTOSAN

THE MACHINE THAT
WASHES TABLEWARE
'CLEAN'

HORN-WATER-PROOFINGS

PROBLEM IX

Waterproofing Expansion Joints and Cracks In Concrete Floor Slabs

Leakage through Expansion Joints and Cracks in Concrete Floor Slabs, and consequent damage to property, results from failure to seal these openings with a permanently efficient material.

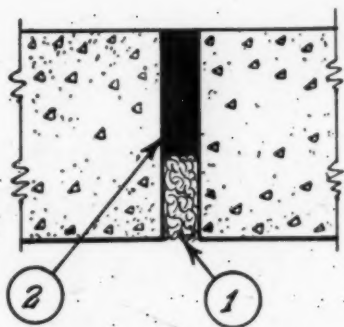


Figure I.
STRAIGHT JOINT
1. Oakum
2. HORN'S EXPANSION
JOINT CEMENT

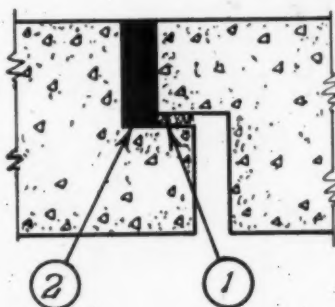


Figure II.
SLIP JOINT
1. Oakum
2. HORN'S EXPANSION
JOINT CEMENT

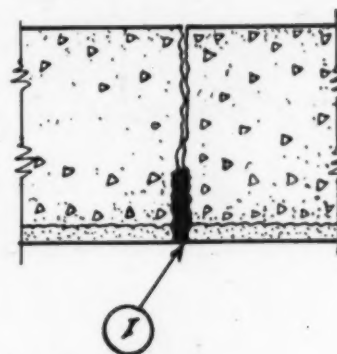


Figure III.
CRACK IN CONCRETE
1. HORN'S EXPANSION
JOINT CEMENT

Solution

The solution of this problem is expressed in the following specifications which meet the requirements of modern building design and construction practice with respect to both methods and materials.

SPECIFICATIONS

(1) *Waterproofing Expansion Joints:*

Picked oakum shall be driven into the expansion joint for a depth of 4 inches after which the sides of the joint above the oakum shall be coated with Dehydratine No. 1, brush coating. The joint shall then be filled with Horn's Expansion Joint Cement which shall be poured hot.

(2) *Waterproofing Cracks in Concrete Slabs:*

All cracks in floor slabs shall be cut out $\frac{3}{4}$ -inch wide and for a depth of at least 1 inch. The sides of the cracks, for the depth cut out shall then be coated with Dehydratine No. 1, brush coating after which the cracks shall be filled with Horn's Expansion Joint Cement which shall be poured hot.

NOTE: HORN'S EXPANSION JOINT CEMENT is a solid asphalt in conjunction with vulcanized oils that must be melted to be used. It is thoroughly waterproof; adheres perfectly to the sides of the joint and remains permanently efficient. This material remains tough and elastic from 0. deg. F. to 160 deg. F.; and will not dry out nor run in summer heat, maintaining a waterproof joint at all times.

Executive Offices
101 Park Avenue,
New York City

A.C. Horn Company

Works
Long Island City,
N. Y.



"IT takes nine tailors to make a man." It takes many types of men to plan and build a building. Particularly is this true when that building is a store. It must be architecturally perfect but deeper than this, it must have "beauty with a business sense." This brings into play the necessity for specialized talent. This need has been created by circumstances and is supplied by our staff of store planners who have 25 years experience as a background. They are ready to serve architects as part of their staff or in any other capacity the architect may elect. They are always available upon request.

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Residence of Mr. John G. Tritton,
The Hills Drive, Utica, N. Y.,
with New Process Red Wheel Gas
Range in kitchen.

Architects: Hugh R. Jones Co.
Builders: Kinne & Frank



Makeshift Kitchens Will Not Do

MODERN KITCHENS must be planned for beauty and for convenient use. Home-making women insist upon kitchens small enough for step-saving and large enough for the correct placing of adequate labor-saving equipment, including a Gas Range with Lorain Self-regulating Oven.

The Lorain Red Wheel makes successful cooking easy, because it measures and automatically maintains the heat of the oven at any desired temperature.

Lorain is the first thermostat ever designed for the automatic control of gas range oven heat. Women know about the Lorain Red Wheel. They have seen the Lorain advertisements in their favorite magazines for more than eight years. In more than 2200 schools and colleges, Red Wheel Gas Ranges are used in home economics laboratories to teach time and temperature oven cookery.

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tects and Builders.

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Largest Makers of Gas Ranges in the World

L O R A I N

 WHERE MONEL METAL SHINES



Monel Metal equipment in the Dining and Service Building of Girard College, Philadelphia, Pa., mfd. and installed by L. BARTH & SON, New York. Architect, JOHN T. WINDRIM, Philadelphia.

GIRARD COLLEGE

PHILADELPHIA



Where kitchens gleam with Monel Metal surfaces

THE more-than-ample endowment, and consequent financial position of Girard College enables this institution to select the very finest equipment for every department.

It is significant, therefore, that the kitchens and food service departments of this famous Philadelphia school are equipped with Monel Metal.

With many different materials to choose from—with financial resources that permit the use of the finest materials—Girard College specified Monel Metal.

Monel Metal is the most economical as well



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as the most attractive of the materials available for food service equipment. It is easy to clean. It will not rust, it resists corrosion. It stands up for years and years under the use and abuse of rigorous service.

Monel Metal is the accepted metal for clinical and laundry as well as food service equipment. It is the logical material for you to use when planning new installations. You can best protect the interests of your clients by specifying long-lasting Monel Metal, wherever cleanliness must be combined with long life.

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Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

MONEL METAL

THE INTERNATIONAL NICKEL COMPANY (INC.)



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**R-U-V is keeping
the swimming
water pure in
the pools of:**

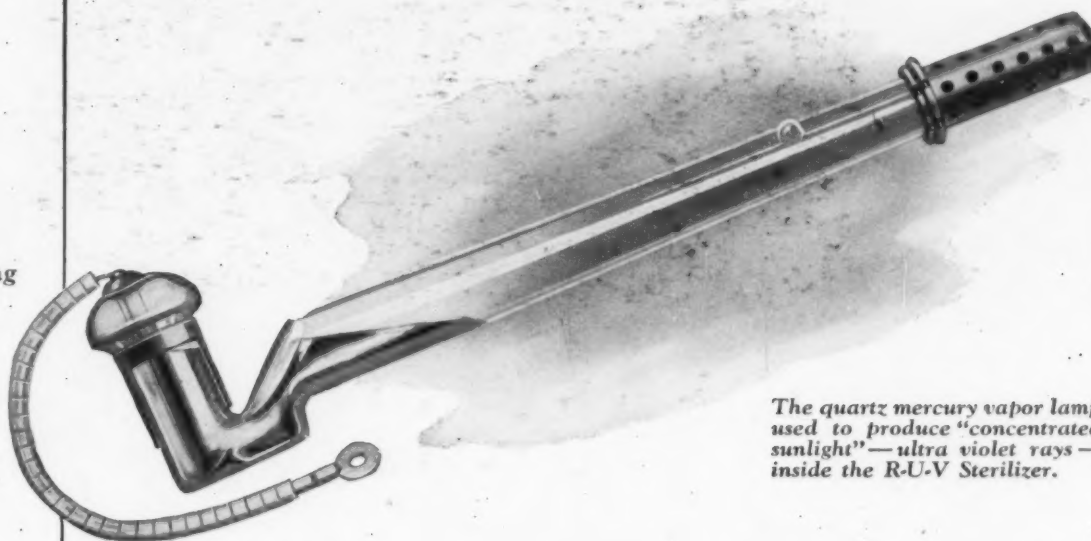
U. S. Naval Academy,
(new pool), Annapolis,
Md.
University of Colorado,
Boulder, Colo.
Vassar College,
Poughkeepsie, N. Y.
Catholic University,
Washington, D. C.
4 Public School Pools,
Tulsa, Okla.
9 Public School Pools,
Kansas City, Mo.
University of Chicago,
Chicago, Ill.
Culver Military Academy,
Culver, Indiana
Kansas City Athletic Club,
Kansas City, Mo.
United Israel Nurses' Home,
48th Street, Brooklyn, N.Y.
Penn Athletic Club,
Philadelphia, Penn.
Union League Club,
Chicago, Ill.

And Many Others

**And the drinking
water supplies for:**

Atchison, Topeka & Santa Fe
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Harbor, N. Y.
Sprague, Warner & Co.,
Chicago, Ill.
Goodyear Tire & Rubber Co.,
Akron, Ohio
Goodrich Transit Co.,
Chicago, Ill.
Miller Hotel Co.,
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And Many Others



The quartz mercury vapor lamp
used to produce "concentrated
sunlight"—ultra violet rays—
inside the R-U-V Sterilizer.

Purifying Water with "Concentrated Sunlight"

Sunlight kills disease germs because it contains ultra violet light. R-U-V Sterilizers use ultra violet light to kill disease germs in recirculating systems for swimming pool water or drinking water.

A quartz mercury-vapor lamp inside the R-U-V Sterilizer floods each drop with concentrated ultra violet.

R-U-V Sterilizers can be hooked into an electric circuit. Their operation is automatic and as simple as turning on and off an electric light. There is no dosing of the water, no constant regulating of apparatus.

Corrosion and the resulting rapid replacements are eliminated. Results are positive.

Write to any of the installations listed in the side column. They will tell you what R-U-V does in actual operation.

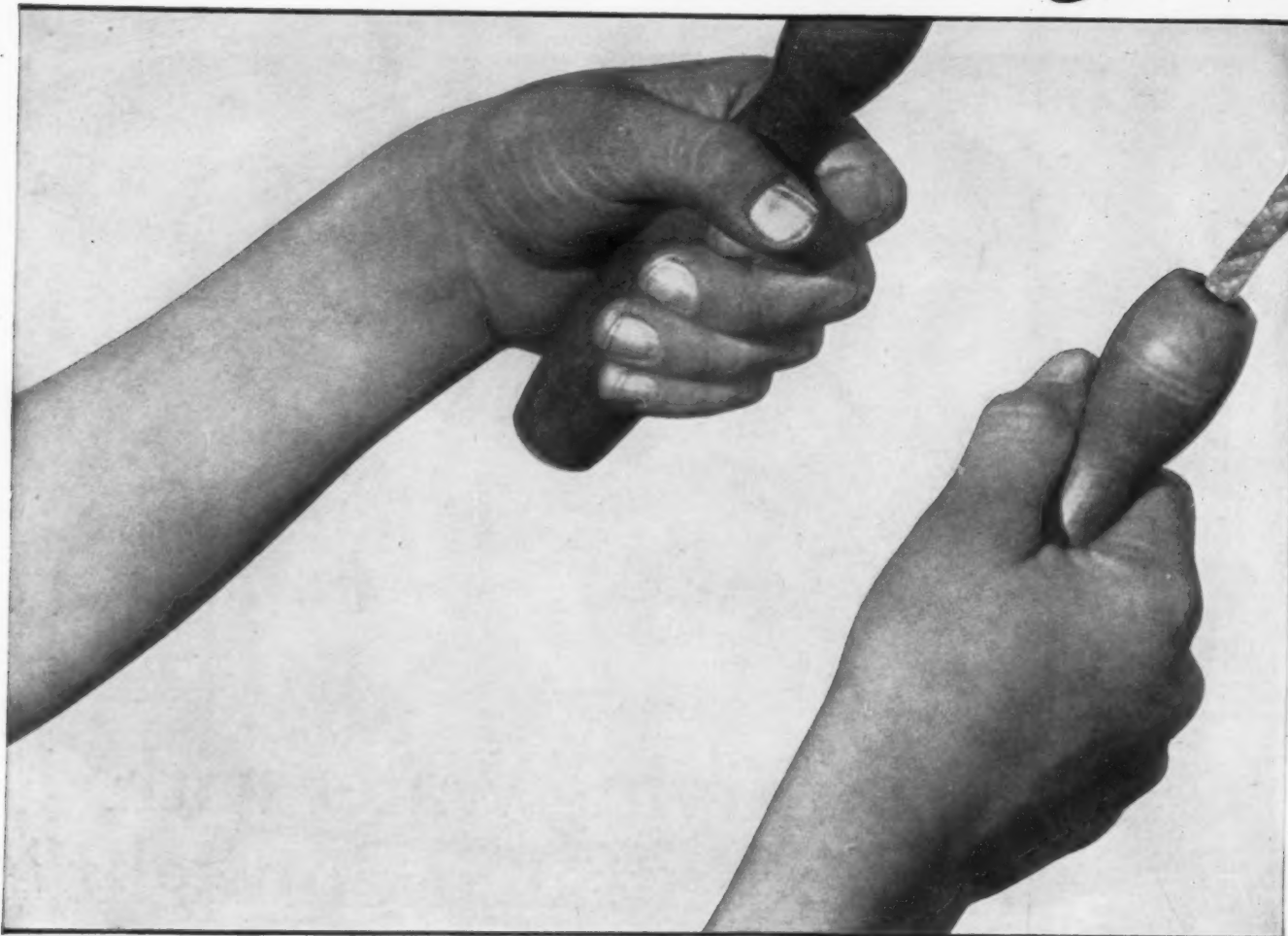
PURE R-U-V WATER

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Ultra Violet Ray Water Sterilization

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201-299 N. Talman Avenue
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Will These Forgetful



Do they control your

Children are forgetful. They don't realize that the water closet is the most important school sanitation fixture. Children don't know how health is endangered when the closet stands unflushed—sending forth disease-bearing flies, and bad odors.

Their forgetful control, is a gamble as to whether the toilet room will be a healthful—or a breeding place for contamination and disease.

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The Clow Automatic closet with closed top tank. Wall hung style allows cleaning underneath.

Architects will be interested in our new Clow school plumbing booklet. It shows how Clow Automatics are assuring sanitation to schools, industrial plants, and public buildings. Send for a copy today

CLOW

N e v e r ,
Forty-Eight Styles,

Childish Hands Remember?



school sanitation?

tion it flushes itself with the pressure of a forty foot standpipe. And only the Clow bowl distributes equally to rim and trap, this high pressure flush.

The Clow-Madden valve is simple. So simple that virtually nothing can go wrong. It never forgets. With but two moving parts it has no complicated valves or floats to wear out or break.

Let the Clow school plumbing booklet tell you how to remove school sanitation from the forgetful hands of children.

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AUTOMATIC

n e v e r f o r g e t s

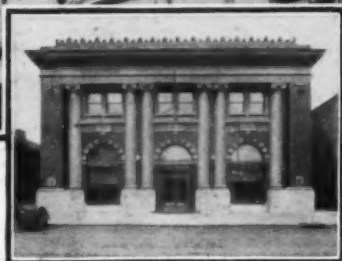
Heights and Types to Meet Your Requirements



Clow Automatic with closed top tank concealed behind back wall. This back wall forms a corridor for ventilation.



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of New Jersey.*



*Interior lighting by
Sol-Lux.*

Re-lamp *without* Re-globing!

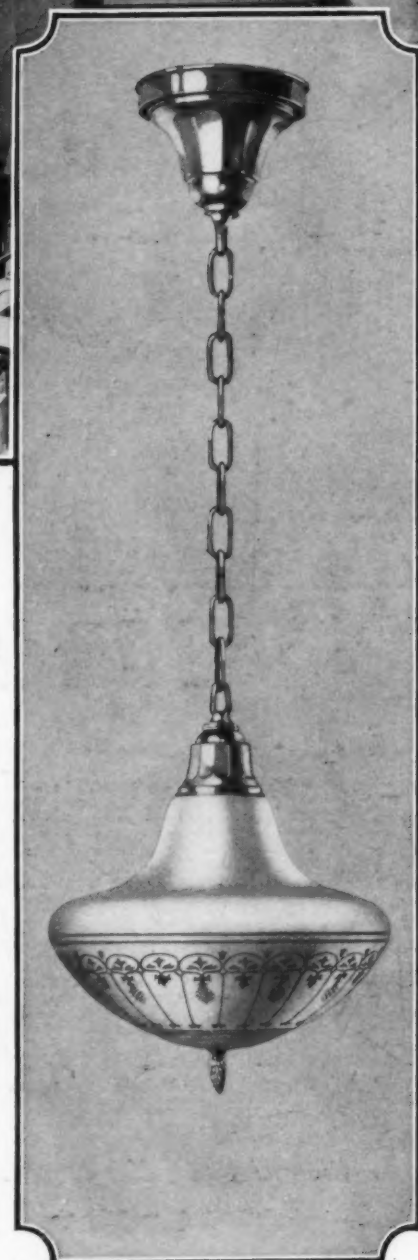
JUST to replace a burned-out lamp in the ordinary globe may let your client in for quite a bit of expense. The set screws must be loosened, the globe must be removed, the dead lamp taken out, the new one inserted, the globe replaced, and, finally, the set screws tightened. Not surprising if, somewhere along the line, the globe is dropped or cracked.

Specify Sol-Lux and the globe need not be handled at all. Merely tilt out the special cap, take out the lamp, put in another, and tilt the cap back. That's all there is to it. Minutes are saved; glass is preserved.

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MERCHANDISING DEPARTMENT, SOUTH BEND WORKS, SOUTH BEND, IND.



Westinghouse



Selected List of Manufacturers' Publications

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum*, 383 Madison Ave., New York, or the manufacturer direct, in which case kindly mention this publication.

ACOUSTICS

- The Celotex Co., Chicago.**
Acousti-Celotex. 16 pp., 8½ x 11 in. Illustrated brochure on a valuable material for facing walls and ceilings.
Specifications and Details for application and decoration of Acousti-Celotex, 11 pp., 8½ x 11 in.
Johns-Manville Corp., Madison Ave. & 41st St., New York, N. Y.
Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in Churches, schools, hospitals, office buildings and other places.
U. S. Gypsum Co., 205 W. Monroe St., Chicago, Ill.
A Scientific Solution of an Old Architectural Problem. Folder 6 pp., 8½ x 11 in. Describes Sabinite Acoustical Plaster.

ASH HOISTS—ELECTRIC AND HAND POWER

- Gillis & Geohagan, 535 West Broadway, New York, N. Y.**
General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturers' name and without). Detail ¼ in. scale for each telescopic model and special material-handling section.
G. & G. Telescopic Hoist. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Electric and hand power models; watertight sidewalk doors; automatic opening, closing, and locking devices.

BASEMENT WINDOWS

- Genfire Steel Company, Youngstown, Ohio.**
Architectural Details. Booklet, 62 pp., 8½ x 11 ins. Details on steel windows.
Truscon Steel Co., Youngstown, Ohio
Truscon Copper-Steel Basement Windows. Booklet, 8 pp., 8½ x 11 in. Illustrated with installation details. Specifications and construction details.

BATHROOM FITTINGS

- A. P. W. Paper Co., Albany, N. Y.**
Onliwon for Pine Buildings. Folder, 8 pp., 3¼ x 6 in. Illustrated. Deals with toilet paper fittings of metal and porcelain. Architects' File Card. 8½ x 11 in. Illustrated. Filing card on toilet paper and paper towel cabinets.
A Towel Built for Its Job. Booklet, 8 pp., 4¼ x 9½ in. Illustrated. Paper Towel System and Cabinets.
Cabinets and Fixtures. Booklet, 31 pp., 5¼ x 4¼ in. Illustrated. Catalog and price list of fixtures and cabinets.
Morton Mfg. Co., 5163 West Lake Street, Chicago.
Bathroom Cabinets for Homes, Apartments, etc. General Catalog, 20 pp., 8 x 10¼ ins. Illustrated. Specifications, installation details, etc.
Booklet, 12 pp., 3¼ x 6¼ ins. Illustrated. Deals with four models of bathroom cabinets.

BRICK

- Acme Brick Company, Ft. Worth, Texas.**
Series No. 1
Architectural designs rendered in Acme Brick. Booklet 11 x 8½ in. Illustrated. A series of 48 photogravures showing architectural designs rendered in Acme brick. Illustrations show the various types of buildings erected in the Southwest in recent years. Sent free to architects applying on their office stationery.
American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.
Brickwork in Italy. 298 pages size 7¼ x 10½ in., an attractive and useful volume on the history and use of brick in Italy from ancient to modern times, profusely illustrated with 69 line drawings, 300 half-tones, and 20 colored plates with a map of modern and XII century Italy. Bound in linen will be sent postpaid upon receipt of \$6.00. Half Morocco, \$7.00.
Industrial Buildings and Housing. Bound volume, 112 pp., 8½ x 11 in. Profusely illustrated. Deals with the planning of factories and employees' housing in detail. Suggestions are given for interior arrangements, including restaurants and rest rooms. Price \$2.
Common Brick Mfrs. Assn. of America, 2134 Guarantee Title Bldg., Cleveland.
Brick; How to Build and Estimate. Brochure, 96 pp., 8½ x 11 ins. Illustrated. Complete data on use of brick.
The Heart of the Home. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Price 25 cents. Deals with construction of fireplaces and chimneys.
Skintled Brickwork. Brochure, 15 pp., 8½ x 11 ins. Illustrated. Tells how to secure interesting effects with common brick.
Building Economy. Monthly magazine, 22 pp., 8½ x 11 ins. Illustrated. \$1 per year, 10 cents a copy. For architects, builders and contractors.

BUILDING, STEEL PRODUCTS FOR

- Truscon Steel Company, Youngstown, Ohio.**
Truscon Data Book. Catalog. 3¼ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

CEMENT

- Carney Company, The, Mankato, Minn.**
What Twelve Men Said About Carney. Booklet, 8½ x 11 ins., Illustrated. Opinions of well known architects and builders of Carney Cement used for mortar.

- Cement Gun Company, Inc., Allentown, Pa.**
Gunite Bulletins. Sheets 6 x 9 in. Illustrated. Bulletins on adaptability of "Gunite," a sand and cement product, to construction work.
Kosmos Portland Cement Company, Louisville, Ky.
Kosmortar for Enduring Masonry. Folder 6 pp., 3¼ x 6¼ in. Data on strength and working qualities of Kosmortar.
Kosmortar, the Mortar for Cold Weather. Folder, 4 pp., 3¼ x 6¼ in. Tells why Kosmortar should be used in cold weather.
Louisville Cement Co., 315 Guthrie St., Louisville, Ky.
BRIXMENT for Perfect Mortar. Self-filing handbook 8½ x 11 inches. 16 pp. Illustrated. Contains complete technical description of BRIXMENT for brick, tile and stone masonry, specifications, data and tests.
Pennsylvania-Dixie Cement Corp'n., 131 East 46th St., New York.
Celluloid Computing Scale for Concrete and Lumber, 4¼ x 2¼ ins. Useful for securing accurate computations of aggregates and cement; also for measuring lumber of different sizes.

CONCRETE BUILDING MATERIALS

- Celite Products Co., 1320 South Hope St., Los Angeles.**
Better Concrete; Engineering Service Bulletin X-325. Booklet, 16 pp., 8½ x 11 ins. Illustrated. On use of Celite to secure workability in concrete, to prevent segregation and to secure water-tightness.
Economic Value of Admixtures. Booklet, 32 pp., 6¼ x 9½ ins. Reprint of papers by J. C. Pearson and Frank A. Hitchcock before 1924 American Concrete Institute.
Concrete Surface Corporation, 342 Madison Ave., New York
Bonding Surfaces on Concrete. Booklet, 12 pp., 8 x 11 in., illustrated. Deals with an important detail of building.
Dovetail Anchor Slot Co., 149 West Ohio Street, Chicago.
Dovetail Masonry Anchoring System. Folder, 4 pp., 8½ x 11 ins. Illustrated. Data on a system of anchoring masonry to concrete.
The Master Builders Co., 7016 Euclid Avenue, Cleveland.
Concrete Floor Treatments-Specification Manual. Booklet, 23 pp., 8½ x 11 ins. Illustrated. Valuable work on an important subject. Color mix, colored Hardened Concrete Floors (Integral). Brochure, 16 pp., 8½ x 11 ins. Illustrated. Data on coloring for floors.
Waterproofing and Damp proofing Specification Manual. Booklet, 18 pp., 8½ x 11 ins. Deals with methods and materials used.
Dycrome, Concrete Surface Hardener in Colors. Folder, 4 pp., 8 x 11 ins. Illustrated. Data on a new treatment.
National Building Units Corporation, 1600 Arch Street, Philadelphia.
Durability and Utility of Straub Cinder Building Blocks. Brochure, 14 pp., 8 x 11 ins. Report on this material by Pittsburgh Testing Laboratories.
Sound Absorption of Cinder Concrete Building Units. Booklet, 8 pp., 8 x 11 ins. Illustrated. Results of tests of absorption and transmission of sound through Straub building blocks.
Philadelphia. Cinder Concrete Building Units. Brochure, 36 pp., 8¼ x 10¼ ins. Illustrated. Full data on an important building material.
Kosmos Portland Cement Company, Louisville, Ky.
High Early Strength Concrete, Using Standard Kosmos Portland Cement. Folder, 1 p., 8½ x 11 in. Complete data on securing high strength concrete in short time.
Solvay Process Co., Syracuse, N. Y.
Solvay Calcium Chloride in Concrete Construction. Brochure, 22 pp., 7 x 10 in. Illustrated. Deals with an important ingredient for concrete.

CONCRETE COLORINGS

- A. C. Horn Company, Long Island City, N. Y.**
Ceramic Catalog. Booklet. 8½ x 11 in. 26 pp. A magnificent brochure, illustrated in color, describing a valuable line of specialties for use with concrete floors—colorings, hardeners, waterproofing, etc.

CONSTRUCTION, FIREPROOF

- National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.**
Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fireproof floor construction.
Northwestern Expanded Metal Co., 1234 Old Colony Building, Chicago, Ill.
Northwestern Expanded Metal Products. Booklet. 8½ x 10¼ in. 16 pp. Fully illustrated, and describes different products of this company, such as Kno-burn metal lath, 20th Century Corrugated, Plaster-Sava and Longspan lath channels, etc.
A. I. A. Sample Book. Bound volume, 8½ x 11 ins., contains actual samples of several materials and complete data regarding their use.

DAMP-PROOFING

- Philip Carey Co., Lockland, Cincinnati, Ohio.**
Architects' Specifications for Carey Built-Up Roofing. Booklet. 8 x 10¼ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.
Carey Built-Up Roofing for Modern School Buildings. Booklet. 8 x 10¼ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 145

DAMP-PROOFING—Continued

- Genfire Steel Company**, Youngstown, Ohio.
Waterproofing Handbook. Booklet. $8\frac{1}{2}$ x 11 in. 72 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete. Free distribution.
- A. C. Horn Company**, Long Island City, N. Y.
Waterproofing. $9\frac{1}{2}$ x $11\frac{1}{4}$ in. Folder. Contains folders giving data on excellent waterproofing and dampproofing materials.
- Sonneborn Sons, Inc., L.**, 116 Fifth Ave., New York.
Specification Sheet, $8\frac{1}{2}$ x 11 in. Descriptions and specifications of compounds for dampproofing interior and exterior surfaces.
- The Vortex Mfg. Co.**, Cleveland, Ohio.
Par-Lock Specification "Forms A and B" for dampproofing and plaster key over concrete and masonry surfaces.
Par-Lock Specification "Form J" for dampproofing tile wall surfaces that are to be plastered.
Par-Lock Dampproofing. Specification Forms C, F, I and J. Sheets $8\frac{1}{2}$ x 11 in. Data on gun-applied asphalt dampproofing for floors and walls.

DOORS AND TRIM, METAL

- The American Brass Company**, Waterbury, Conn.
Anaconda Architectural Bronze Extruded Shapes. Brochure, 180 pp., $8\frac{1}{2}$ x 11 in., illustrating and describing more than 2,000 standard bronze shapes of cornices, jamb casings, mouldings, etc.
- The Compound & Pyrono Door Company**, St. Joseph, Mich.
Pyrono Handbook for Architects and Contractors. $8\frac{1}{2}$ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.
Pyrono details in sheet form for tracing.
- Richards-Wilcox Mfg. Co.**, Aurora, Ill.
Fire Doors and Hardware. Booklet. $8\frac{1}{2}$ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

DUMBWAITERS

- Sedgwick Machine Works**, 151 West 15th St., New York.
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. $4\frac{1}{4}$ x $8\frac{3}{4}$ in. 60 pp. Illustrated.
Catalog and pamphlets, $8\frac{1}{2}$ x 11 in. Illustrated. Valuable data on dumb waiters.

ELECTRICAL EQUIPMENT

- Frank Adam Electric Company**, St. Louis, Mo.
Catalog No. 35-1925. Panelboards—Steel Cabinets. $7\frac{3}{4}$ x $10\frac{1}{2}$ in. 64 pp. Illustrates and describes sectionally built panelboards, an important line of steel cabinets, and the fittings which go with them.
- General Electric Co.**, Schenectady, N. Y.
"Electrical Specification Data for Architects. Brochure, 36 pp., 8 x $10\frac{1}{2}$ in., illustrated. Data regarding G. E. wiring materials and their use.
"The House of a Hundred Comforts." Booklet, 40 pp., 8 x $10\frac{1}{2}$ in. Illustrated. Dwells on importance of adequate wiring.
- Pick & Company, Albert**, 208 West Randolph St., Chicago, Ill.
School Cafeterias. Booklet, 9 x 6 in. Illustrated. The design and equipment of school cafeterias with photographs of installation and plans for standardized outfits.
- Westinghouse Electric & Mfg. Co.**, East Pittsburgh, Pa.
Electric Power for Buildings. Brochure, 14 pp., $8\frac{1}{2}$ x 11 in. Illustrated. A publication important to architects and engineers.
Variable-Voltage Central Systems as applied to Electric Elevators. Booklet, 13 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Deals with an important detail of elevator mechanism.
Modern Electrical Equipment for Buildings. Booklet, $8\frac{1}{2}$ x 11 in. Illustrated. Lists many useful appliances.
Electrical Equipment for Heating and Ventilating Systems. Booklet, 24 pp., $8\frac{1}{2}$ x 11 in. Illustrated. This is "Motor Application Circular 7379."
Westinghouse Panelboards and Cabinets (Catalog 42-A). Booklet, 32 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Important data on these details of equipment.
Beauty; Power; Silence; Westinghouse Fans (Dealer Catalog 45). Brochure, 16 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Valuable information on fans and their uses.
Electric Range Book for Architects (A. I. A. Standard Classification 31 G-4). Booklet, 24 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Cooking apparatus for buildings of various types.
Westinghouse Commercial Cooking Equipment (Catalog 280). Booklet, 32 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Equipment for cooking on a large scale.
Electric Appliances (Catalog 44-A). 32 pp., $8\frac{1}{2}$ x 11 in. Deals with accessories for home use.

ELEVATORS

- Otis Elevator Company**, 260 Eleventh Ave., New York, N. Y.
Otis Push Button Controlled Elevators. Descriptive leaflets. $8\frac{1}{2}$ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.
Otis Geared and Gearless Traction Elevators of All Types. Descriptive leaflets. $8\frac{1}{2}$ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.
Escalators. Booklet. $8\frac{1}{2}$ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theaters and industrial buildings. Also includes elevators and dock elevators.
- Richards-Wilcox Mfg. Co.**, Aurora, Ill.
Elevators. Booklet. $8\frac{1}{2}$ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator door hardware and checking devices, also automatic safety devices.
- Sedgwick Machine Works**, 151 West 15th St., New York, N. Y.
Catalog and descriptive pamphlets, $4\frac{1}{4}$ x $8\frac{3}{4}$ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.
Catalog and pamphlets. $8\frac{1}{2}$ x 11 in. Illustrated. Important data on different types of elevators.

FIREPROOFING—See also Construction, Fireproof

- Concrete Engineering Co.**, Omaha, Nebr.
"Handbook of Fireproof Construction." Booklet, 53 pp., $8\frac{1}{2}$ x 11 in. Valuable work on methods of fireproofing.
- Genfire Steel Company**, Youngstown, Ohio.
Fireproofing Handbook, $8\frac{1}{2}$ x 11 in. 64 pp. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.
- North Western Expanded Metal Co.**, 407 South Dearborn Street, Chicago.
A. I. A. Sample Book. Bound volume, $8\frac{1}{2}$ x 11 in. Contains actual samples of several materials and complete data regarding their use.

FLOOR HARDENERS (CHEMICAL)

- Sonneborn Sons, Inc., L.**, 116 Fifth Ave., New York, N. Y.
Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

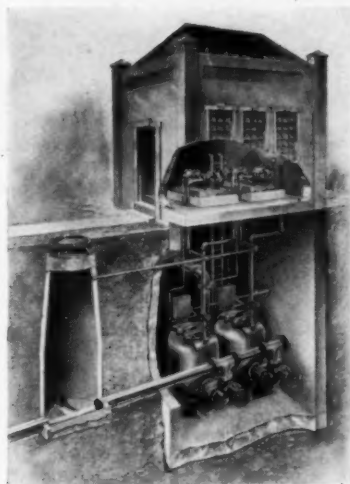
FLOORS—STRUCTURAL

- Truscon Steel Co.**, Youngstown, Ohio
Truscon Locktile. Booklet, $8\frac{1}{2}$ x 11 in., 8 pp. Illustrations of material and showing methods of application.
Truscon Floretyle Construction. Booklet, $8\frac{1}{2}$ x 11 in., 16 pp. Illustrations of actual jobs under construction. Lists of properties and information on proper construction. Proper method of handling and tables of safe loads.

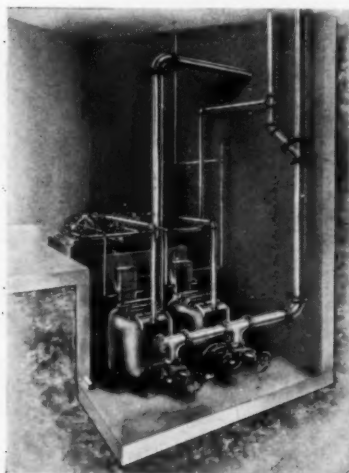
FLOORING

- Armstrong Cork & Insulation Co.**, Pittsburgh, Pa.
Armstrong's Cork Tile Floors. Booklet, $7\frac{3}{4}$ x $10\frac{1}{2}$ in. 30 pp. An illustrated work on cork flooring.
- Armstrong Cork Co. (Linoleum Division)**, Lancaster, Pa.
Armstrong's Linoleum Floors. Catalog. $8\frac{1}{2}$ x 11 in. 40 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.
Armstrong's Linoleum Pattern Book, 1927. Catalog. $3\frac{1}{2}$ x 6 in. 272 pp. Color Plates. Reproduction in color of all patterns of linoleum and cork carpet in the Armstrong line.
Quality Sample Book. $3\frac{1}{2}$ x $5\frac{1}{4}$ in. Showing all gauges and thicknesses in the Armstrong line of linoleums.
Linoleum Layer's Handbook. 5 x 7 in. 32 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.
Enduring Floors of Good Taste. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.
- Barber Asphalt Co.**, Philadelphia.
Specifications for Applying Genasco Asphalt Mastic. Booklet. 8 x $10\frac{1}{2}$ in. Directions for using Asphalt Mastic for flooring.
- Blabon Company, Geo. W.**, Nicetown, Philadelphia, Pa.
Planning the Color Schemes for Your Home. Brochure illustrated in color; 36 pp., $7\frac{1}{2}$ x $10\frac{1}{4}$ in. Gives excellent suggestions for use of color in flooring for houses and apartments.
Handy Quality Sample Folder of Linoleums. Gives actual samples of "Battleship Linoleum," cork carpet, "Feltex," etc.
Blabon's Linoleum. Booklet illustrated in color; 128 pp., $3\frac{1}{2}$ x $8\frac{1}{2}$ in. Gives patterns of a large number of linoleums.
Blabon's Plain Linoleum and Cork Carpet. Gives quality samples, 3 x 6 in. of various types of floor coverings.
- Bonded Floors Company, Inc.**, 1421 Chestnut St., Philadelphia, Pa.
A series of booklets, with full color inserts showing standard colors and designs. Each booklet describes a resilient floor material as follows:
Battleship Linoleum. Explains the advantages and uses of this durable, economical material.
Marble-ized (Cork Composition) Tile. Complete information on cork-composition marble-ized tile and the many artistic effects obtainable with it.
Treadlite (Cork Composition) Tile. Shows a variety of colors and patterns of this adaptable cork composition flooring.
Natural Cork Tile. Description and color plates of this super-quiet, resilient floor.
Practical working specifications for installing battleship linoleum, cork composition tile and cork tile.
- Carter Bloxonend Flooring Co.**, Keith & Perry Bldg., Kansas City, Mo.
Bloxonend Flooring. Booklet $3\frac{1}{4}$ x $6\frac{1}{4}$ in. 20 pp. Illustrated. Describes uses and adaptability of Bloxonend Flooring to concrete, wood or steel construction, and advantages over loose wood blocks.
File Folder, $9\frac{1}{4}$ x $11\frac{3}{4}$ in. For use in connection with A. I. A. system of filing. Contains detailed information on Bloxonend Flooring in condensed, loose-leaf form for specification writer and drafting room. Literature embodied in folder includes standard Specification Sheet covering the use of Bloxonend in general industrial service and Supplementary Specification Sheet No. 1, which gives detailed description and explanation of an approved method for installing Bloxonend in gymnasiums, armories, drill rooms and similar locations where maximum resiliency is required.
- Albert Grauer & Co.**, 1408 Seventeenth Street, Detroit, Mich.
Grauer-Watkins Red Asphalt Flooring. Folder, 4 pp., $8\frac{1}{2}$ x 11 in. Data on a valuable form of flooring.
- Norton Company**, Worcester, Mass.
Filing Folder. $8\frac{1}{2}$ x $11\frac{3}{4}$ in. 27 pp. Illustrated with drawings. Specification data for architects.
- Ritter Lumber Co., W. M.**, Columbus, Ohio.
Ritter Oak Flooring, brochure 5 x 7 in. 31 pp. Illustrated. Excellent data on floors of different kinds and of various woods.
Beauty Begins in the Forest.
Large illustrated folder on modern flooring.
- U. S. Gypsum Co.**, Chicago.
Pyrobar Floor Tile. Folder. $8\frac{1}{2}$ x 11 in. Illustrated. Data on building floors of hollow tile, and tables on floor loading.

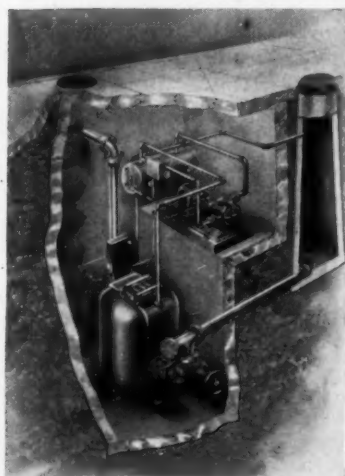
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Jennings Pumps

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 146

FLOORING—Continued

- United States Quarry Tile Co., Parkersburg, W. Va.
Quarry Tiles for Floors. Booklet, 119 pp., 8½ x 11 ins. Illustrated. General catalog. Details of patterns and trim for floors.
- Art Portfolio of Floor Designs. 9¼ x 12¼ ins. Illustrated in colors. Patterns of quarry tiles for floors.
- U. S. Rubber Co., 1790 Broadway, New York.
Period Adaptations for Modern Floors. Brochure. 8 x 11 in. 60 pp. Richly illustrated. A valuable work on the use of rubber tile for flooring in interiors of different historic styles.
- Zenitherm Co., Inc., 390 Frelinghuysen Avenue, Newark, N. J.
Zenitherm Floors. Booklet, 14 pp., 8½ x 11 ins. Illustrated. Floors for interior and semi-interior use.
- Contractors Handbook. Brochure, 10 pp., 4½ x 6 ins. Complete data for using Zenitherm.

FURNITURE

- American Seating Co., 14 E. Jackson Blvd., Chicago, Ill.
Ars Ecclesiastica Booklet. 6 x 9 in. 48 pp. Illustrations of church fittings in carved wood.
- Theater Chairs. Booklet. 6 x 9 in. 48 pp. Illustrations of theater chairs.
- Concealed Bed Corporation, 58 East Washington St., Chicago.
Eight-Room Convenience at Six-Room Price. Booklet, 16 pp. 3¼ x 5 in. Illustrated. Data on concealed beds for home owners.
- Save Floor Space. Brochure, 36 pp. 4 x 8¼ in. Illustrated. Describes Holmes beds, giving measurement data.
- Kensington Mfg. Company, Showrooms, 41 West 45th St., New York.
Illustrated booklet indicative of the scope, character and decorative quality of Kensington Furniture, with plan of co-operation with architects, sent on request.
- Photographs and full description of hand-made furniture in all the period styles, furnished in response to a specific inquiry.
- McKinney Mfg. Co., Pittsburgh.
Forethought Furniture Plans. Sheets, 6¼ x 9 ins., drawn to ¼-inch scale. An ingenious device for determining furniture arrangement.
- White Door Bed Company, The, 130 North Wells Street, Chicago, Ill.
Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes and illustrates the use of "White" Door Bed and other space-saving devices.

GARAGES

- Ramp Buildings Corporation, 21 East 40th Street, New York.
Building Garages for Profitable Operation. Booklet. 8½ x 11 in. 16 pp. Illustrated. Discusses the need for modern mid-city parking garages, and describes the d'Humy Motoramp system of design, on the basis of its superior space economy and features of operating convenience. Gives cost analyses of garages of different sizes, and calculates probable earnings.
- Garage Design Data. Series of informal bulletins issued in loose-leaf form, with monthly supplements.

GLASS CONSTRUCTION

- Adamston Flat Glass Co., Clarksburg, W. Va.
Quality and Dependability. Folder, 2 pp., 8½ x 11 ins. Illustrated. Data in the company's product.
- Libbey-Owens Sheet Glass Co., Toledo, O.
Flat Glass. Brochure, 11 pp., 5¼ x 7¼ ins. Illustrated. History of manufacture of flat, clear, sheet glass.
- Mississippi Wire Glass, 220 Fifth Avenue, New York.
Mississippi Wire Glass. Catalog. 3¼ x 8½ in. 32 pp. Illustrated. Covers the complete line.

GRILLES

- Metalace Corporation, South Boston, Mass.
Metalace, Catalog D. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Data on a valuable type of material for grilles, bank screens, radiator enclosures, etc.
- Wickwire Spencer Steel Co., Inc., 41 East 42nd St., New York.
Clinton Grilles. Booklet. 9 x 11 in. 12 pp. A brochure on metal grilles, particularly for use over heating radiators.

HARDWARE

- P. & F. Corbin, New Britain, Conn.
Early English and Colonial Hardware. Brochure, 8½ x 11 in. An important illustrated work on this type of hardware.
- Locks and Builders' Hardware. Bound Volume, 486 pp., 8½ x 11 in. An exhaustive, splendidly prepared volume.
- Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.
- McKinney Mfg. Co., Pittsburgh.
Forged Iron by McKinney. Booklet, 6 x 9 ins. Illustrated. Deals with an excellent line of builders' hardware.
- Forged Lanterns by McKinney. Brochure, 6 x 9 ins. Illustrated. Describes a fine assortment of lanterns for various uses.
- Richards-Wilcox Mfg. Co., Aurora, Ill.
Distinctive Garage Door Hardware. Booklet. 8½ x 11 in. 65 pp. Illustrated. Complete information accompanied by data and illustrations on different kinds of garage door hardware.
- Sargent & Company, New Haven, Conn.
Details to Which Standard Hardware Can Be Applied. Booklet. 6 pp. 9 x 12 in. Illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.
- Sargent Locks and Hardware. Bound volume, 534 pp., 9 x 12 in., illustrated. Complete catalog of Sargent line of hardware.

HEATING EQUIPMENT

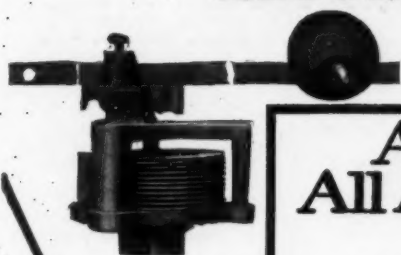
- American Blower Co., 6004 Russell Street, Detroit.
Heating and Ventilating Utilities. A binder containing a large number of valuable publications, each 8½ x 11 in., on these important subjects.
- American Radiator Company, The, 40 West 40th St., N. Y. C.
Ideal Type "A" Heat Machine. Catalog 7¼ x 10½ in. 32 pp. Illustrated in 4 colors. A brochure of high-efficiency heating apparatus for residences and commercial buildings.

HEATING EQUIPMENT—Continued

- Ideal Water Tube Boilers. Catalog 7¼ x 10½. 32 pp. Illustrated in 4 colors. Data on a complete line of Heating Boilers of the Water Tube type.
- Ideal Smokeless Boilers. Catalog 7¼ x 10½ in. 32 pp. Illustrated in 4 colors. Fully explains a boiler free from the objection of causing smoke.
- Ideal Boilers for Oil Burning. Catalog 5½ x 8½ in. 36 pp. Illustrated in 4 colors. Describing a line of Heating Boilers especially adapted to use with Oil Burners.
- Corto—The Radiator Classic. Brochure 5½ x 8½ in. 16 pp. Illustrated. A brochure on a space-saving radiator of beauty and high efficiency.
- Ideal Arcola Radiator Warmth. Brochure 6¼ x 9¼. Illustrated. Describes a central all-on-one-floor heating plant with radiators for small residences, stores, and offices.
- James B. Clow & Sons, 534 S. Franklin St., Chicago.
Clow Gastean Vented Heating System. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Deals with a valuable form of heating equipment for using gas.
- C. A. Dunham Company, 450 East Ohio Street, Chicago, Ill.
Dunham Radiator Trap. Bulletin 101. 8 x 11 in. 12 pp. Illustrated. Explains working of this detail of heating apparatus.
- Dunham Packless Radiator Valves. Bulletin 104. 8 x 11 in. 8 pp. Illustrated. A valuable brochure on valves.
- Dunham Return Heating System. Bulletin 109. 8 x 11 in. Illustrated. Covers the use of heating apparatus of this kind.
- Dunham Vacuum Heating System. Bulletin 110. 8 x 11 in. 12 pp. Illustrated.
- The Dunham Differential Vacuum Heating System. Bulletin 114. Brochure, 8 pp., 8 x 11 ins. Illustrated. Deals with heating for small buildings.
- The Dunham Differential Vacuum Heating System. Bulletin 115. Brochure, 12 pp., 8 x 11 ins. Illustrated. Deals with heating for large buildings.
- Excelsco Products Corporation, 119 Clinton St., Buffalo, N. Y.
Excelsco Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelsco method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)
- The Fulton Syphon Company, Knoxville, Tenn.
Syphon Temperature Regulators. Illustrated brochures, 8½ x 11 in., dealing with general architectural and industrial applications; also specifically with applications of special instruments.
- Syphon Heating Specialties. Catalog No. 200, 192 pp., 3½ x 6¼ ins. Important data on heating.
- Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.
Vapor Heat Bulletin 21. 8½ x 11 in. 32 pp. Illustrated. Contains new and original data on Vapor Heating. Rules for computing radiation, pipe sizes, radiator tappings. Steam table showing temperature of steam and vapor at various pressures, also description of Illinois Vapor Specialties.
- S. T. Johnson Co., Oakland, Calif.
Bulletin No. 4A. Brochure, 8 pp., 8½ x 11 in. Illustrated. Data on different kinds of oil-burning apparatus.
- Bulletin No. 31. Brochure, 8 pp., 8½ x 11 in. Illustrated. Deals with Johnson Rotary Burner With Full Automatic Control.
- Kewanee Boiler Co., Kewanee, Ill.
Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.
- Catalog No. 78, 6 x 9 in. Illustrated. Describes Kewanee Fire-box Boilers with specifications and setting plans.
- Catalog No. 79. 6 x 9 in. Illustrated. Describes Kewanee power boilers and smokeless tubular boilers with specifications.
- May Oil Burner Corp., Baltimore.
Adventures in Comfort. Booklet, 24 pp., 6 x 9 ins. Illustrated. Non-technical data on oil as fuel.
- Taking the Quest out of the Question. Brochure, 16 pp., 6 x 9 ins. Illustrated. For home owners interested in oil as fuel.
- Milwaukee Valve Co., Milwaukee.
MILVACO Vacuum & Vapor Heating System. Nine 4-p. bulletins, 8½ x 11 ins. Illustrated. Important data on heating.
- MILVACO Vacuum & Vapor Heating Specialties. Nine 4-p. bulletins, 8½ x 11 ins. Illustrated. Deal with a valuable line of specialties used in heating.
- Nash Engineering Company, South Norwalk, Conn.
No. 37. Devoted to Jennings Hytor Return Line Vacuum Heating Pumps, electrically driven, and supplied in standard sizes up to 300,000 square feet equivalent direct radiation.
- No. 16. Dealing with Jennings Hytor Air Line Heating Pumps.
- No. 17. Describing Jennings Hytor Condensation Pumps, sizes up to 70,000 square feet equivalent direct radiation.
- No. 25. Illustrating Jennings Return Line Vacuum Heating Pumps. Size M, for equivalent direct radiation up to 5,000 square feet.
- National Radiator Company, Johnstown, Pa.
Aero Radiators; Beauty and Worth. Catalog 34. Booklet 6 x 9 in., 20 pp., describing and illustrating radiators and accessories.
- The Thatcher Company, 39 St. Francis Street, Newark, N. J.
Helpful Hints on Choosing Your Heater. Booklet, 20 pp., 3½ x 6¼ ins. Illustrated. Valuable data on types of heating.
- Economical Warmth. Brochure, 8 pp., 3½ x 6¼ ins. Illustrated. Deals with economical heating.
- Rome Brass Radiator Corp., 1 East 42nd Street, New York.
Steam Heat by Wire. Folder, 8 pp., 4 x 6 ins. Illustrated. Data on an improved electric heater.
- Robras Electric Steam Radiator. Folder, 4 pp., 8½ x 11 ins. Illustrated. A means of obtaining supplementary or emergency heating.
- Trane Co., The, La Crosse, Wis.
Bulletin 14. 16 pp. 8½ x 10½ in. Cover the complete line of Trane Heating Specialties, including Trane Bellows Traps, and Trane Bellows Packless Valves.
- Bulletin 20. 24 pp. 8½ x 10½ in. Explains in detail the operation and construction of Trane Condensation. Vacuum, Booster, Circulating, and similar pumps.

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Imperial
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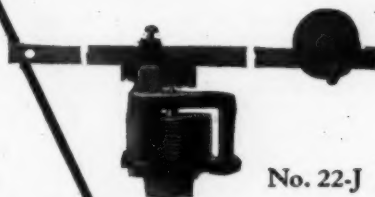
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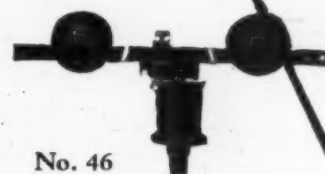
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ELECTRIC WELDED STEEL HEATING BOILERS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 148

HEATING EQUIPMENT—Continued

- Williams Oil-O-Matic Heating Corp.**, Bloomington, Ill.
Oil Heating at Its Best. Brochure, 24 pp., 5 x 8 inches. Illustrated. Non-technical description of the advantages of using oil for heating.
- Williams Oil-O-Matic Heating Corp.**, Bloomington, Ill.
Oil Heating and What It Means to the Architect. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Use of oil from an architect's point of view.

HOSPITAL EQUIPMENT

- The Frink Co., Inc.**, 24th St. and Tenth Ave., New York City.
Catalog 426. 7 x 10 in., 16 pp. A booklet illustrated with photographs and drawings, showing the types of light for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses.
- The International Nickel Company**, 67 Wall St., New York, N. Y.
Hospital Applications of Monel Metal. Booklet, 8½ x 11½ in., 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.
- The Kny-Scheerer Corporation of America**, 119 Seventh Ave., New York.
Hospital Equipment, 16th Edition. 7¼ x 10¼ in., 232 pp. Illustrated. Complete description of Hospital and Surgical Furniture, Hospital Appliances including Operating Tables, Cabinets, Sterilizers for Water, Dressing and Instruments, also Hydrotherapeutic Apparatus.
- Surgical Sundries**. Second Edition. Booklet, 7¼ x 10¼ in., 48 pp. Illustrated. A complete line of glassware, enamelware, rubber goods, restraint apparatus, instrument sterilizers, sputum cups, wheel chairs and sick room comforts.
- Electro Medical**. 25th Edition. Booklet, 7¼ x 10¼ in., 160 pp. Illustrated. A complete line of Albee Bone Sets. Apparatus for AC and DC Cystoscopes, Heat Magnets, Vibrators, Compressors, Electric Light Baths, High Frequency Apparatus and X-Ray Apparatus and Accessories.
- The Pick-Barth Companies**, Chicago and New York.
Some Thoughts About Hospital Food Service Equipment Booklet, 21 pp., 7¼ x 9¼ ins. Valuable data on an important subject.
- Wilmot Castle Company**, Rochester, N. Y.
Sterilizer Equipment for Hospitals. Book, 76 pp., 8½ x 11 in. Illustrated. Gives important and complete data on sterilization of utensils and water, information on dressings, etc.
- Sterilizer Specifications**. Brochure, 12 pp., 8½ x 11 in. Practical specifications for use of architects and contractors.
- Architects' Data Sheets**. Booklet, 16 pp., 8½ x 11 in. Illustrated. Information on piping, venting, valving and wiring for hospital sterilizer installations.
- Hospital Sterilizing Technique**. Five booklets, 8 to 16 pp., 6 x 9 in. Illustrated. Deals specifically with sterilizing instruments, dressings, utensils, water, and rubber gloves.

HOTEL EQUIPMENT

- Pick & Company, Albert**, 208 West Randolph Street, Chicago, Ill.
Some Thoughts on Furnishing a Hotel. Booklet, 7½ x 9 ins. Data on complete outfitting of hotels.

INSULATING LUMBER

- Mason Fibre Co.**, 111 West Washington St., Chicago, Ill.
Booklet, 12 pp., 8½ x 11 in. Illustrated. Gives complete specifications for use of insulating lumber and details of construction involving its use.

INSULATION

- Armstrong Cork & Insulation Co.**, Pittsburgh, Pa.
The Insulation of Roofs with Armstrong's Corkboard. Booklet. Illustrated. 7¼ x 10¼ in., 32 pp. Discusses means of insulating roofs of manufacturing or commercial structures.
- Insulation of Roofs to Prevent Condensation**. Illustrated booklet. 7¼ x 10¼ in., 36 pp. Gives full data on valuable line of roof insulation.
- Filing Folder for Pipe Covering Data**. Made in accordance with A. I. A. rules.
- "The Cork Lined House Makes a Comfortable Home." 5 x 7 in., 32 pp. Illustrated.
- Armstrong's Corkboard Insulation for Walls and Roofs of Buildings**. Booklet, 66 pp., 9¼ x 11¼ ins. Illustrates and describes use of insulation for structural purposes.
- Cabot, Inc., Samuel**, Boston, Mass.
Cabot's Insulating Quilt. Booklet, 7¼ x 10¼ ins., 24 pp. Illustrated. Deals with a valuable type of insulation.
- Calite Products Co.**, 1320 South Hope St., Los Angeles.
The Insulation of Boilers. Booklet, 8 pp., 8½ x 11 ins. Illustrated. On insulating boiler walls, breechings, and stacks to reduce amount of radiation.
- Heat Insulation Specifications and Blue Prints**. Booklet, 20 pp., 8½ x 11 ins. Illustrated. On approved types of insulation.
- Flax-li-num Insulating Company**, St. Paul, Minn.
"Heat Insulation for Houses." Booklet, 64 pp., 9¼ x 11¼ ins. Illustrated. Authoritative information on thermal insulation with complete specifications for all types of buildings.
- Philip Carey Co., The**, Cincinnati, Ohio.
Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in., 72 pp. Illustrated.
- Celotex Company, The**, 645 N. Michigan Ave., Chicago, Ill.
The Hidden Comfort of Costly Homes. Booklet 8½ x 11 in. Celotex Specifications. Booklet 8½ x 11 in.
- Johns-Manville Corp.**, Madison Ave. & 41st St., New York, N. Y.
Johns-Manville Service to Industry. Catalog. 8½ x 11 ins., 300 pp. Illustrated. Contains valuable data on all forms of insulation, packings, steam traps, high temperature cements, brake blocks, linings, flooring, roofing, asbestos specialties, waterproofing and dampproofing, also general technical data.
- A Representation Installation of the Johns-Manville Underground System of Insulation**. Booklet 20 pp., 8½ x 11 ins.

JOISTS

- Bates Expanded Steel Truss Co.**, East Chicago, Ind.
Catalog No. 4. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Gives details of truss construction with loading tables and specifications.
- Truscon Steel Co.**, Youngstown, Ohio
Truscon Steel Joists. Booklet, 8½ x 11 in., 16 pp. Illustrated with typical buildings and showing details of construction. Tables of sizes and safe loads.
- Truscon Steel Joist Buildings**. Illustrated 32-page brochure, attractively illustrated, showing types of buildings equipped with Truscon Steel Joist.
- Strip Steel Joist Construction**. 14-page booklet, with illustrations. Reprint of paper presented to Building Officials' Conference, Madison, Wis., 1925, by J. J. Calvin, Secretary, Strip Steel Joist Association.

KITCHEN EQUIPMENT

- The International Nickel Company**, 67 Wall St., New York, N. Y.
Hotels, Restaurants and Cafeteria Applications of Monel Metal. Booklet, 8½ x 11 in., 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of equipment.
- McDougall Company**, Frankfort, Ind.
Kitchens for Homes and Apartments. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Views and plans of conveniently equipped kitchens.
- File Folder**. Service sheets and specifications useful in preparing kitchen layouts.
- Domestic Science Kitchen Units**. Brochure, 8 pp., 8½ x 11 ins. Illustrated. Deals with flexible line of kitchen equipment.
- Pick & Company, Albert**, 208 W. Randolph St., Chicago, Ill.
School Cafeteria. Portfolio, 17 x 11 in., 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue prints. Very valuable to the architect.
- School Cafeterias**. Booklet, 9 x 6 in. Illustrated. The design and equipment of school cafeterias with photographs of installation and plans for standardized outfits.

LABORATORY EQUIPMENT

- Alberens Stone Co.**, 153 West 23rd Street, New York City
Booklet 8¼ x 11¼ in., 26 pp. Stone for laboratory equipment, shower partitions, stair treads, etc.
- Duriron Company**, Dayton, Ohio.
Duriron Acid, Alkali and Rust-proof Drain Pipe and Fittings. Booklet, 8½ x 11 ins., 20 pp. Full details regarding a valuable form of piping.

LANTERNS

- Todhunter, Arthur**, 119 E. 57th St., New York.
Hand Wrought Lanterns. Booklet, 5¼ x 6¼ in., 20 pp. Illustrated in Black and White. With price list. Lanterns appropriate for exterior and interior use, designed from old models and meeting the requirements of modern lighting.

LATH, METAL AND REINFORCING

- Genfire Steel Company**, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in., 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone.
- Rigid Metal Lath and interior plastering**.
- Milwaukee Corrugating Co.**, Milwaukee, Wis.
The Milcor Manual. Booklet 8½ x 11 in., 64 pp. Illustrated. Covers Milcor methods and materials, metal lath, corner beads, steel domes, channels, etc.
- Northwestern Expanded Metal Co.**, 1234 Old Colony Building, Chicago, Ill.
Northwestern Expanded Metal Products. Booklet, 8½ x 10¼ in., 20 pp. Fully illustrated, and describes different products of this company, such as Kno-burn metal lath, 20th Century Corrugated, Plasta-saver and Longspan lath channels, etc.
- Longspan ¾" Rib Lath**. Folder 4 pp., 8½ x 11 ins. Illustrated. Deals with a new type of V-rib expanded metal.
- A. I. A. Sample Book**. Bound volume, 8½ x 11 ins. Contains actual samples of several materials and complete data regarding their use.
- Wickwire Spencer Steel Co., Inc.**, 41 East 42nd St., New York.
Clinton Wire Lath. Brochure, 9 x 11 in., 51 pp. A valuable booklet on metal lathing and the proper method of using it.
- Truscon Steel Company**, Youngstown, Ohio.
Truscon 1-A Metal Lath. 12-page booklet, 8½ x 11 in., beautifully printed, with illustrations of details of lath and method of application.
- Truscon ¾-inch Hy-Rib for Roofs, Floors and Walls**. Booklet, 8½ x 11 in., illustrating Truscon ¾-in. Hy-Rib as used in industrial buildings, plates of typical construction. Progressive steps of construction. Specification and load tables.
- ### LAUNDRY CHUTES
- The Pfaunder Company**, 217 Cutler Building, Rochester, N. Y.
Pfaunder Glass-Lined Steel Laundry Chutes. Booklet, 5¼ x 7¼ in., 16 pp. Illustrated. A beautifully printed brochure describing in detail with architects' specifications THE PFAUNDER GLASS LINED STEEL LAUNDRY CHUTES. Contains views of installations and list of representative examples.
- ### LAUNDRY MACHINERY
- American Laundry Machinery Co.**, Norwood Station, Cincinnati, Ohio.
Functions of the Hotel and Hospital Laundry. Brochure, 8 pp., 8½ x 11 ins. Valuable data regarding an important subject.

Less Radiation is Required when you Insulate the Roof with Cork

THE ECONOMY of insulating the roof of a new building with Armstrong's Corkboard is immediately apparent when you figure the radiation for the top floor. An adequate thickness of Armstrong's Corkboard materially reduces the heat loss through the roof, and decreases in the same proportion the radiation requirements for the top story.

In many cases, also, a smaller heating plant can be safely used and a part of the investment in corkboard thus immediately charged off. The amount of reduction for any specific building depends, of course, on the proportion of roof exposure to wall exposure. It will be more for low buildings of extensive roof area than for tall buildings of small roof area.

In addition to the saving in the cost of the heating plant, there is a saving in the consumption of fuel which continues throughout the life of the building.

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for the Roofs of All Kinds of Buildings



Filing Catalog for Architects

Complete information about insulation with Armstrong's Corkboard has been published in this handy reference book for architect, draftsman, engineer or specification writer. Sent free on request. Armstrong Cork & Insulation Company, 132 Twenty-fourth Street, Pittsburgh, Pa.

Every Roof Needs Insulation

Insulating the roof of Nurses' Home, St. Mary's Hospital, Kansas City, Mo., with Armstrong's Corkboard. 2 inches thick. Wilkinson and Crans, Architects.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 150

LIBRARY EQUIPMENT

- Art Metal Construction Co.**, Jamestown, N. Y.
Planning the Library for Protection and Service. Brochure, 52 pp., 8½ x 11 in. Illustrated. Deals with library fillings of different kinds.
- Library Bureau Division, Remington Rand, N. Tonawanda, N. Y.
Like stepping into a Story Book. Booklet, 24 pp., 9 x 12 ins. Deals with equipment of Los Angeles Public Library.
- Snead & Company**, Jersey City, N. J.
Library Planning, Bookstacks and Shelving. Bound Volume, 271 pp., 9 x 12 ins. Illustrated. A valuable work "for distribution among architects, librarians and trustees."

LIGHTING EQUIPMENT

- The Frink Co., Inc.**, 24th St. and 10th Ave., New York City.
Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross-sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.
- Gleason-Tiebout Glass Co. (Celestialite Division)**, 200 Fifth Avenue, New York.
Next to Daylight Brochure, 19 pp., 4 x 8½ ins. Illustrated. Deals with a valuable type of lighting fixture.
- Celestialite Circular No. 40. Folder, 4 pp., 3½ x 6 ins. "What Nature does to the Sun, Celestialite does to the Mazda lamp." Attractive Units in Celestialite. Folder, 12 pp., 3¼ x 6½ ins. Illustrates Decorated Celestialite Units.
- It Has Been Imitated. Folder, 4 pp., 10 x 13 ins. Data in an important detail of lighting equipment.
- Guth Company, The Edwin F.**, 1015 Washington Ave., St. Louis, Mo.
Guth Lighting Equipment (Catalog No. 15). Booklet, 8½ x 11 ins. Fully illustrated, and covering lighting fixtures for buildings of all kinds.
- Forge Craft (Catalog No. 16). Booklet, 16 pp., 8½ x 10¼ ins. Brochure dealing specifically with fixtures intended for use in buildings of the so-called "bungalow" type.
- Agilite Porcelain Enameled Illuminators. Folder, 4 pp., 8½ x 11 in. on a new and improved type of lighting.

MAIL CHUTES

- Cutler Mail Chute Company**, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet, 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

- Arthur Todhunter**, 119 E. 57th St., New York, N. Y.
Georgian Mantels. New Booklet. 24 pp. 5¼ x 6¼ in. A fully illustrated brochure on eighteenth century mantels. Folders give prices of mantels and illustrations and prices of fireplace equipment.

MARBLE

- The Georgia Marble Company**, Tate, Ga. New York Office, 1328 Broadway.
Why Georgia Marble is Better. Booklet. 3¼ x 6 in. Gives analysis, physical qualities, comparison of absorption with granite, opinions of authorities, etc.
- Convincing Proof. 3¼ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

METALS

- American Sheet & Tin Plate Co.**, Frick Building, Pittsburgh, Pa.
Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.
- Apollo and Apollo-Keystone Galvanized Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.
- Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.
- The International Nickel Company**, 67 Wall St., New York, N. Y.
The Choice of a Metal. Booklet. 6¼ x 3 in. 166 pp. Illustrated. Monel Metal—its qualities, use and commercial forms, briefly described.

MILL WORK—See also Wood

- Curtis Companies Service Bureau**, Clinton, Iowa.
Architectural Interior and Exterior Woodwork. Standardized. Book. 9 x 11¼ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.
- Better Built Homes. Vols. XV-XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.
- Curtis Details. Booklet. 19½ x 23¼ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.
- Hartmann-Sanders Company**, 2155 Elston Ave., Chicago, Ill.
Column Catalog. 7½ x 10 in. 48 pp. Illustrated. Contains prices on columns 6 to 36 in. diameter, various designs and illustrations of columns and installations.
- The Pergola Catalog. 7½ x 10 in. 64 pp. Illustrated. Contains illustrations of pergola lattices, garden furniture in wood and cement, garden accessories.
- Roddie Lumber and Veneer Co.**, Marshfield, Wis.
Roddie Doors. Brochure, 24 pp., 5¼ x 8½ in. Illustrated price list of doors for various types of buildings.
- Roddie Doors, Catalog G. Booklet, 183 pp., 8½ x 11 in. Completely covers the subject of doors for interior use.
- Roddie Doors for Hospitals. Brochure, 15 pp., 8½ x 11 in. Illustrated work on hospital doors.
- Roddie Doors for Hotels. Brochure, 15 pp., 8½ x 11 in. Illustrated work on doors for hotel and apartment buildings.

MORTAR COLORS

- Clinton Metallic Paint Co.**, Clinton, N. Y.
Clinton Mortar Colors. Folder. 8½ x 11 in. 4 pp. Illustrated in color, gives full information concerning Clinton Mortar Colors with specific instructions for using them.
- Color Card. 6¼ x 3¼ in. Illustrates in color the ten shades in which Clinton Mortar Colors are manufactured.
- Something new in Stucco. Folder. 3¼ x 6 ins. An interesting folder on the use of coloring matter for stucco-coated walls.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

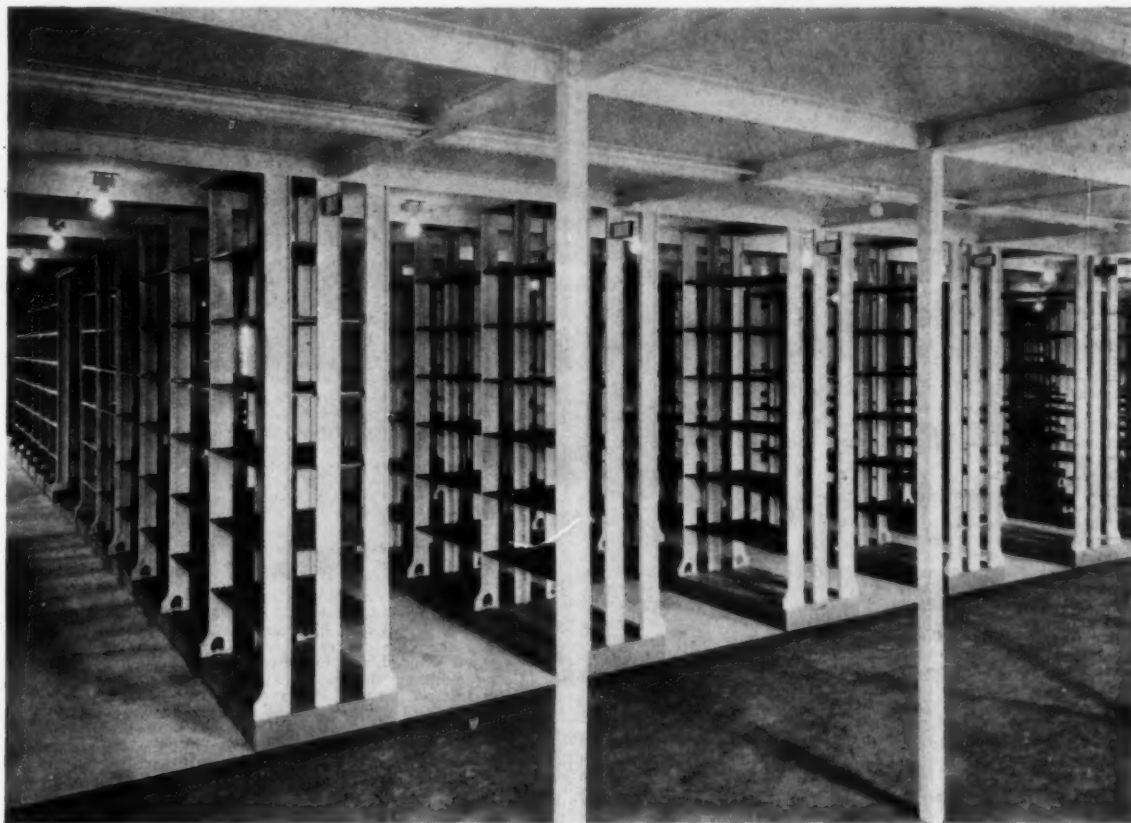
- Cabot, Inc., Samuel**, Boston, Mass.
Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.
- The Glidden Company**, Cleveland, Ohio.
More Daylight. 8 x 10¼ in. 20 pp. Portraying by illustrations and text the need and methods of modern mill painting.
- Glidden Specification Book. 8 x 10¼ in. 12 pp. Complete architectural specifications for Glidden Paints and Varnishes, including Ripolin. Directions for the proper finishing of wood.
- A. C. Horn Company**, Long Island City, N. Y.
Ceramic Catalog. Booklet 26 pp., 8½ x 11 in. A magnificent brochure illustrated in color, describing a valuable line of specialties for use with concrete floors—colorings, hardeners, waterproofing, etc.
- National Lead Company**, 111 Broadway, New York, N. Y.
Handy Book on Painting. Book. 5¼ x 3¼ in. 100 pp. Gives directions and formulae for painting various surfaces of wood, plaster, metals, etc., both interior and exterior.
- Red Lead in Paste Form. Booklet. 6¼ x 3¼ in. 16 pp. Illustrated. Directions and formulae for painting metals.
- Came Lead. Booklet. 8¼ x 6 in. 12 pp. Illustrated. Describes various styles of lead came.
- Cinch Anchoring Specialties. Booklet. 6 x 3¼ in. 20 pp. Illustrated. Describes complete line of expansion bolts.
- Prett & Lambert, Inc.**, Buffalo, N. Y.
Specification Manual for Paint, Varnishing and Enameling. Booklet, 38 pp., 7½ x 10¼ ins. Complete specifications for painting, varnishing and enameling interior and exterior wood, plaster, and metal work.
- The Ripolin Company**, Cleveland, Ohio.
Ripolin Specifications. Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.
- Why Ripolin Has an International Reputation. 8 x 10¼ in. 24 pp. Designed for the architect's files to illustrate the many varied uses of Ripolin Enamel Paint in all parts of the world. Profusely illustrated.
- Ruberoid Co., The** (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Preservative Coating. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.
- Sherwin-Williams Company**, 601 Canal Rd., Cleveland, Ohio.
Painting Concrete and Stucco Surfaces. Bulletin No. 1. 8½ x 11 in. 8 pp. Illustrated. A complete treatise with complete specifications on the subject of Painting of Concrete and Stucco Surfaces. Color chips of paint shown in bulletin.
- Enamel Finish for Interior and Exterior Surfaces. Bulletin No. 2. 8½ x 11 in. 12 pp. Illustrated. Thorough discussion, including complete specifications for securing the most satisfactory enamel finish on interior and exterior walls and trim.
- Painting and Decorating of Interior Walls. Bulletin No. 3. 8½ x 11 in. 20 pp. Illustrated. An excellent reference book on Flat Wall Finish, including texture effects, which are taking the country by storm. Every architect should have one on file.
- Protective Paints for Metal Surfaces. Bulletin No. 4. 8½ x 11 in. 12 pp. Illustrated. A highly technical subject treated in a simple, understandable manner.
- Sonneborn Sons, Inc., L.**, Dept. 4, 116 Fifth Avenue, New York.
Paint Specifications. Booklet. 8½ x 10¼ in. 4 pp.
- U. S. Gutta Percha Paint Co.**, Providence, R. I.
Barreled Sunlight. Booklet, 8½ x 11 in. Data on "Barreled Sunlight" with specifications for its use.
- Valentine & Co.**, 456 Fourth Avenue, New York.
How to Use Valspar. Illustrated booklet, 32 pp., 3¼ x 8 ins. Deals with domestic uses for Valspar.
- How to Keep Your House Young. Illustrated brochure, 23 pp., 7 x 8½ in. A useful work on the upkeep of residences.
- Zapon Co., The**, 247 Park Ave., New York City.
Zapon Architectural Specifications. Booklet, 28 pp., 8½ x 11 in. Describes odorless brushing and spraying lacquers and lacquer enamels.

PAPER

- A. P. W. Paper Co.**, Albany, N. Y.
"Here's a Towel Built for Its Job." Folder, 8 pp., 4 x 9 ins. Deals with "Onliwon" paper towels.

PARTITIONS

- Circle A Products Corporations**, New Castle, Ind.
Circle A Partitions Sectional and Movable. Brochure. Illustrated. 8½ x 11¼ in. 32 pp. Full data regarding an important line of partitions, along with Erection Instructions for partitions of three different types.
- Hauserman Company**, E. F., Cleveland, Ohio.
Hollow Steel Standard Partitions. Various folders, 8½ x 11. Illustrated. Give full data on different types of steel partitions, together with details, elevations and specifications.
- Improved Office Partition Company**, 25 Grand St., Elmhurst, L. I.
Telesco Partition. Catalog. 8½ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.
- Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.
- Richards-Wilcox Mfg. Co.**, Aurora, Ill.
Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.
- U. S. Gypsum Co.**, Chicago.
Pyrobar Partition and Furring Tile. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes use and advantages of hollow tile for inner partitions.



Snead Standard Stack Type A, Library of Congress, Northeast Court, Wash., D. C.

SNEAD BOOKSTACKS

Library of Congress

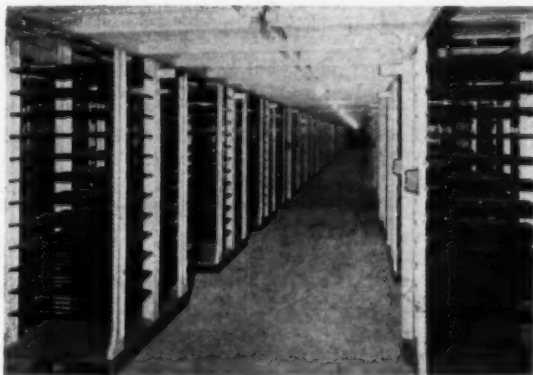
THE stack (see above) in the Northeast Court, a fourteen-tier stack which supports its own roof, accommodates over one and one-half million volumes. The library of Congress also contains four other great stacks and several small ones—all Snead stacks. These stacks are

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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 152

PIPE

- American Brass Company, Waterbury, Conn.**
Bulletin B-1. Brass Pipe for Water Service. $8\frac{1}{2}$ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I.P.S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.
- American Rolling Mill Company, Middletown, Ohio.**
How ARMCO Dredging Products Cut Costs. Booklet, 16 pp., 6 x 9 in. Data on dredge pipe.
- Cement Lined Pipe Company, Lynn, Mass.**
Cement Lined Pipe for Corrosive Waters. Booklet, 20 pp., 6 x 9 in. Illustrated. Data on cement lining to prevent corrosion in pipe.
- Clow & Sons, James B., 534 S. Franklin St., Chicago, Ill.**
Catalog "A". 4 x $6\frac{1}{2}$ in. 700 pp. Illustrated. Shows a full line of steam, gas and water works supplies.
- Cohoes Rolling Mill Company, Cohoes, N. Y.**
Cohoes Pipe Handbook. Booklet, 40 pp., 5 x $7\frac{1}{2}$ in. Data on wrought-iron pipe.
- Duriron Company, Inc., Dayton, Ohio.**
Duriron Acid, Alkali, Rust-proof Drain Pipe and Fittings. Booklet, 20 pp., $8\frac{1}{2}$ x 11 in., illustrated. Important data on a valuable line of pipe.
- National Tube Co., Frick Building, Pittsburgh, Pa.**
"National" Bulletin No. 2. Corrosion of Hot Water Pipe. ($8\frac{1}{2}$ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.
- "National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion ($8\frac{1}{2}$ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion, and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.
- "National" Bulletin No. 25. "National" Pipe in Large Buildings. $8\frac{1}{2}$ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.
- Modern Welded Pipe.** Book of 88 pp. ($8\frac{1}{2}$ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

PLUMBING EQUIPMENT

- Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.**
Catalog "M". $9\frac{1}{4}$ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.
- Crane Company, 836 S. Michigan Avenue, Chicago, Ill.**
Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.
- Plumbing Suggestions for Industrial Plants. Catalog. 4 x $6\frac{1}{2}$ in. 43 pp. Illustrated.
- Planning the Small Bathroom. Booklet. 5 x 8 in. Discusses planning bathrooms of small dimensions.
- Duriron Company, Dayton, Ohio.**
Duriron Acid, Alkali and Rust-proof Drain Pipe and Fittings. Booklet, $8\frac{1}{2}$ x 11 in., 20 pp. Full details regarding a valuable form of piping.
- Eljer Company, Fort City, Pa.**
Complete Catalog. $3\frac{1}{4}$ x $6\frac{1}{4}$ in. 104 pp. Illustrated. Describes fully the complete Eljer line of standardized vitreous china plumbing fixtures, with diagrams, weights and measurements. Standardized Sixteen Circular. $3\frac{1}{4}$ x $6\frac{1}{4}$ in. 18 pp. Illustrated.
- Imperial Brass Mfg. Co., 1200 W. Harrison Street, Chicago, Ill.**
Watrous Patent Flush Valves, Duojet Water Closets, Liquid Soap Fixtures, etc. $8\frac{1}{2}$ x 11 in., 136 pp., loose-leaf catalogue, showing roughing-in measurements, etc.
- Maddock's Sons Company, Thomas, Trenton, N. J.**
Catalog K. $10\frac{1}{4}$ x $7\frac{1}{2}$ in. 242 pp. Illustrated. Complete data on vitreous china plumbing fixtures with brief history of Sanitary Pottery.
- Speakman Company, Wilmington, Del.**
Speakman Showers and Fixtures. Catalog. $4\frac{1}{2}$ x $7\frac{1}{2}$ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc. Toned Up in Ten Minutes. Booklet. $7\frac{1}{2}$ x $10\frac{1}{2}$ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

PUMPS

- Chicago Pump Company, 2300 Wolfram Street, Chicago, Ill.**
The Correct Pump to Use. Portfolio containing handy data. Individual bulletins, $8\frac{1}{2}$ x 11 in., on bilge, sewage, condensation, circulating, house, boiler feed and fire pumps.
- Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.**
Bulletin E. $7\frac{1}{4}$ x $10\frac{1}{4}$ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

RAMPS

- Ramp Buildings Corporation, 21 East 40th Street, New York.**
Building Garages for Profitable Operation. Booklet. $8\frac{1}{2}$ x 11 in. 16 pp. Illustrated. Discusses the need for modern mid-city parking garages, and describes the d'Humy Motoramp system of design, on the basis of its superior space economy and features of operating convenience. Gives cost analyses of garages of different sizes, and calculates probable earnings.
- Garage Design Data. Series of informal bulletins issued in loose-leaf form, with monthly supplements.
- The Trane Co., LaCrosse, Wis.**
Trane Small Centrifugal Pumps. Booklet. $3\frac{1}{4}$ x 8 in., 16 pp. Complete data on an important type of pump.

REFRIGERATION

- The Fulton Syphon Company, Knoxville, Tenn.**
Temperature Control of Refrigeration Systems. Booklet, 8 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Deals with cold storage, chilling of water, etc.

REINFORCED CONCRETE—See also Construction, Concrete

- Genfire Steel Company, Youngstown, Ohio.**
Self-Sentering Handbook. $8\frac{1}{2}$ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.
- Truscon Steel Company, Youngstown, Ohio.**
Shearing Stresses in Reinforced Concrete Beams. Booklet. $8\frac{1}{2}$ x 11 in. 12 pp.
- North Western Expanded Metal Company, Chicago, Ill.**
Designing Data. Book. 6 x 9 in. 96 pp. Illustrated. Covers the use of Econo Expanded Metal for various types of reinforced concrete construction.
- Longspan $3\frac{1}{2}$ " Rib Lath. Folder 4 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Deals with a new type of V-rit expanded metal.

ROOFING

- American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.**
Better Buildings. Catalog. $8\frac{1}{2}$ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.
- Copper—Its Effect Upon Steel for Roofing Tin. Catalog. $8\frac{1}{2}$ x 11 in. 28 pp. Illustrated. Describes the merits of high-grade roofing tin plates and the advantages of the copper-steel alloy. The Testimony of a Decade. Booklet. $8\frac{1}{2}$ x 11 in. 16 pp., with Graphic Chart and illustrations showing losses to various Iron and Steel Sheets for roofing, from atmosphere corrosion.
- Barber Asphalt Co., Philadelphia, Pa.**
Specifications, Genasco Standard Trinidad Lake Asphalt Built-up Roofing. Booklet. 8 x $10\frac{1}{2}$ in. Gives specifications for use of several valuable roofing and waterproofing materials.
- The Barrett Company, 40 Rector Street, New York City**
Architects' and Engineers' Built-up Roofing Reference Series; Volume IV Roof Drainage System. Brochure. 63 pp. $8\frac{1}{2}$ x $11\frac{1}{4}$ in. Gives complete data and specifications for many details of roofing.
- Philip Carey Co., Lockland, Cincinnati, Ohio.**
Architects Specifications for Carey Built-up Roofing. Booklet. 8 x $10\frac{1}{2}$ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.
- Carey Built-up Roofing for Modern School Buildings. Booklet. 8 x $10\frac{1}{2}$ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.
- Federal Cement Tile Co., 608 So. Dearborn St., Chicago, Ill.**
Series of Folders, 4 pp., $8\frac{1}{2}$ x 11 in. Illustrate and describe the installation of permanent concrete interlocking tile, tile with glass insets, flat tile and channel tile, on all types of industrial plants, public and other buildings with flat and pitched surfaces. Standards. Booklet. $8\frac{1}{2}$ x 11 in. 40 pp. Illustrated with full-page drawings. Gives full details of all forms of roof construction of steel structure, ridge and gutter construction, purlin arrangement, spacing, etc., for standard roofs.
- The Ideal Retaining Wall. Leaflet, 4 pp., $8\frac{1}{2}$ x 11 in., illustrated. Valuable data on use of Federal Cribbing Units for constructing retaining walls.
- The Roof for Permanence. Booklet, 12 pp., $8\frac{1}{2}$ x 11 in., illustrated. Deals with Federal Cement Tile for flat and pitched roofs for large buildings.
- Heinz Roofing Tile Co., 1750 Champa St. Denver.**
Plymouth-Shingle Tile with Sprocket Hips. Leaflet, $8\frac{1}{2}$ x 11 in. Illustrated. Shows use of English shingle tile with special hips.
- Italian Promenade Floor Tile. Folder, 2 pp., $8\frac{1}{2}$ x 11 in. Illustrated. Floor tiling adapted from that of Davanzati Palace Mission Tile. Leaflet, $8\frac{1}{2}$ x 11 in. Illustrated. Tile such as are used in Italy and southern California.
- Georgian Tile. Leaflet, $8\frac{1}{2}$ x 11 in. Illustrated. Tiling as used in old English and French farmhouses.
- Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.**
"Ancient" Tapered Mission Tiles. Leaflet. $8\frac{1}{2}$ x 11 in. 4 pp. Illustrated. For architects who desire something out of the ordinary, this leaflet has been prepared. Describes briefly the "Ancient" Tapered Mission Tiles, hand-made, with full corners and designed to be applied with irregular exposures.
- Milwaukee Corrugating Co., Milwaukee, Wis.**
The Milcor Architectural Sheet Metal Guide. Booklet. $8\frac{1}{2}$ x 11 in. 64 pp. Illustrated. Gives valuable technical sheet metal data.
- Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.**
Instructions for Laying Built-up Roofs. Booklet. $8\frac{1}{2}$ x 11 in. Illustrated.
- Ruberoid Facts Worth Knowing. Booklet, 20 pp., 6 x 9 in. Illustrated. Useful data on roofing.
- Ruberoid Asbestos Slates. Folder. Illustrated. Information and specifications for using asbestos slates.
- U. S. Gypsum Co., Chicago.**
Pyrobar Roof Construction. Booklet. 8 x 11 in. 48 pp. Illustrated. Gives valuable data on the use of tile in roof construction.
- Sheetrock Pyrofill Roof Construction. Folder. $8\frac{1}{2}$ x 11 in. Illustrated. Covers use of roof surfacing which is poured in place.

SASH CHAIN

- Smith & Egge Mfg. Co., The, Bridgeport, Conn.**
Chain Catalog. 6 x $8\frac{1}{2}$ in. 24 pp. Illustrated. Covers complete line of chains.

SEWAGE DISPOSAL

- Chicago Pump Co., 2336 Wolfram St., Chicago, Ill.**
Flush-Kleen Dry Basin Sewage Ejector. Booklet, 16 pp., $8\frac{1}{2}$ x 11 in. Illustrations and data on an important detail of equipment.

SCREENS

- American Brass Co., The, Waterbury, Conn.**
Facts for Architects About Screening. Illustrated folder, $9\frac{1}{2}$ x $11\frac{1}{4}$ in., giving actual samples of metal screen cloth and data on fly screens and screen doors.



HOTEL ANTHONY WAYNE
Hamilton, Ohio

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Consultant Architects—GEO. B. POST & SONS
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CARNEY CEMENT
for Brick and Tile Mortar

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 154

ROOFING—Continued

- Athey Company**, 5015 West 65th St., Chicago, Ill.
The Athey Perennial Window Shade. An accordion pleated window shade, made from translucent Herringbone woven Coutil cloth, which raises from the bottom and lowers from the top. It eliminates awnings, affords ventilation, can be dry-cleaned and will wear indefinitely.
- The Higgin Manufacturing Co.**, Newport, Ky.
Your Home Screened the Higgin Way. Booklet. 8½ x 11½ in. 13 pp. Illustrated in colors. Complete description of Higgin Screens, designed to meet every need.

SEWAGE DISPOSAL

- Kewanee Private Utilities**, 442 Franklin St., Kewanee, Ill.
Specification Sheets. 7¼ x 10¼ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHELVING-STEEL

- David Lupton's Sons Company**, Philadelphia, Pa.
Lupton Steel Shelving. Catalog D. Illustrated brochure, 40 pp., 8½ x 11 in. Deals with steel cabinets, shelving, racks, doors, partitions, etc.

SKYLIGHTS

- Albert Grauer & Co.**, 1408 Seventeenth Street, Detroit, Mich.
Grauer Wire Glass Skylights. Folder, 4 pp., 8½ x 11 in. Illustrated. Data on an important line of wire glass lights.
- The Effectiveness of Sidewalk Lights. Folder, 4 pp., 8½ x 11 in. Illustrated. Sidewalk or vault lights.
- Let in the Light—The Light That's Free. Folder, 4 pp., 8½ x 11 in. Illustrated. Data on securing good lighting.

SOUND DEADENER

- Cabot, Inc.**, Samuel, Boston, Mass.
Cabot's Deadening Quilt. Brochure 7½ x 10½ ins., 28 pp., Illustrated. Gives complete data regarding a well-known protection against sound.

STEEL PRODUCTS FOR BUILDING

- Ganfere Steel Company**, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone.
- Rigid Metal Lath and interior plastering.
- Westinghouse Electric & Mfg. Co.**, East Pittsburgh, Pa.
The Arc Welding of Structural Steel. Brochure, 32 pp., 8½ x 11 in. Illustrated. Deals with an important structural process.

STONE, BUILDING

- Indiana Limestone Company**, Bedford, Ind.
Volume 3, Series A-J. Standard Specifications for Cut Indiana Limestone work, 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.
- Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
- Vol. 4. Series B. Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.
- Volume 5. Series B. Indiana Limestone Library. Portfolio. 11¼ x 8¼ in. Illustrated. Describes and illustrates the use of stone for small houses with floor plans of each.
- Volume 6, Series B—Indiana Limestone School and College Buildings. 8½ x 11 in., 80 pages, illustrated.
- Volume 12, Series B—Distinctive Homes of Indiana Limestone. 8½ x 11 in., 48 pages, illustrated.
- Old Gothic Random Ashlar. 8½ x 11 in., 16 pages, illustrated.

STORE FRONTS

- Brasco Manufacturing Co.**, 5025-35 South Wabash Avenue, Chicago, Ill.
Portfolio. 8½ x 11 in. 32 pp. Illustrated. Selected examples of Brasco Copper Store Fronts suitable for different businesses and varying conditions of locations.
- Catalog 28. 8½ x 10¼ in. 20 pp. Illustrated with plates. Details of Brasco Copper Store front construction. Also show-cases, ventilator sashes.
- Detail Sheets. Set of five sheets giving details and suggestions for store front designing enclosed in envelope convenient for filing.
- Brasco Copper Store Fronts; Series 202, Brasco Standard Construction. Illustrated brochure. 16 pp., 8¼ x 11 in. Complete data on an important type of building.
- Brasco Copper Store Fronts; Series 500, All-copper Construction. Illustrated brochure. 20 pp., 8½ x 11 in. Deals with store fronts of a high class.
- The Kawneer Company**, Niles, Mich.
Store Front Suggestions. Booklet, 96 pp., 6 x 8½ ins. Illustrated. Shows different types of Kawneer Solid Copper Store Fronts.
- Catalog K, 1927 Edition. Booklet, 32 pp., 8½ x 11 in. Illustrated. Details of Kawneer Copper Store Fronts.
- Detail Sheets for Use in Tracing. Full-sized details on sheets 17 x 22 ins.
- Modern Bronze Store Front Co.**, Chicago Heights, Ill.
Introducing Extruded Bronze Store Front Construction. Folder, 4 pp., 8½ x 11 in. Illustrated. Contains full sized details of metal store fronts.
- Zouri Drawn Metals Company**, Chicago Heights, Ill.
Zouri Safety Key-Set Store Front Construction. Catalog. 8½ x 10½ in. 60 pp. Illustrated. Complete information with detailed sheets and installation instructions convenient for architects' files.
- International Store Front Construction. Catalog. 8½ x 10 in. 70 pp. Illustrated. Complete information with detailed sheets and installation instructions, convenient for architects' files.

SWIMMING POOL EQUIPMENT & STERILIZATION

- R. U. V. Company, Inc.**, 383 Madison Avenue, New York City.
Water Sterilization by Means of Ultra Violet Rays. Booklet. 8½ x 11 in. 16 pp. Full data on a system of purifying water.
- Swimming Pool Sterilization. Booklet. 8½ x 11 in. 24 pp. Describes a method purifying water in bathing pools.

SWIMMING POOL EQUIPMENT & STERILIZATION—Continued

- Wallace & Tiernan Company**, Newark, N. J.
The W. & T. Chlorometer, Technical Publication, No. 55. Booklet, 8½ x 11 in. 8 pp. Illustrated. A useful brochure dealing with the value of pure water and the importance of the chlorination process in sterilization.
- W. & T. Chloro-Clock. Folder, 8½ x 11 in. Illustrated. Mechanism for feeding small quantities of sterilizing solutions.
- Manual Central Solution Feed Chlorinator, Type M. S. P. Folder, 8½ x 11 in. Illustrated. Valuable for swimming pool equipment.

TERRA COTTA

- National Terra Cotta Society**, 19 West 44th St., New York, N. Y.
Standard Specifications for the Manufacture, Furnishing and Setting of Terra Cotta. Brochure 8½ x 11 in. 12 pp. Furnishing and Setting of Terra Cotta, consisting of complete detail Specification, Glossary of Terms Relating to Terra Cotta and Short Form Specification for incorporating in Architects' Specifications.
- Color in Architecture. Revised Edition. Permanently bound volume 9¼ x 12¼ in., containing a treatise upon the basic principles of color in architectural design, illustrating early European and modern American examples. Excellent illustrations in color.
- Present Day Schools. 8½ x 11 in. 32 pp. Illustrating 42 examples of school architecture with article upon school building design by James O. Betelle, A. I. A.
- Better Banks. 8½ x 11 in. 32 pp. Illustrating many banking buildings in terra cotta with an article on its use in bank design by Alfred C. Bossom, Architect.

TILE, HOLLOW

- National Fire Proofing Co.**, 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
- Standard Fireproofing Bulletin 171, 8½ x 11 in., 32 pp. Illustrated. A treatise on the subject of hollow tile as used for floors, girder, column and beam covering and similar construction.
- Natco Double Shell Load Bearing Tile Bulletin, 8½ x 11 in., 6 pp. Illustrated.
- Natco Unibacker Tile Bulletin, 8½ x 11 in., 4 pp. Illustrated.
- Natco Header Backer Tile Bulletin, 8½ x 11 in., 4 pp. Illustrated.
- NATCOFLOR Bulletin, 8½ x 11 in., 6 pp. Illustrated.
- Natco Face Tile for the Up-to-Date Farm Bulletin, 8½ x 11 in.

TILES

- United States Quarry Tile Co.**, Parkersburg, W. Va.
Quarry Tiles for Floors. Booklet, 119 pp., 8½ x 11 in. Illustrated. General catalog. Details of patterns and trim for floors.
- Art Portfolio of Floor Designs. 9¼ x 12¼ in. Illustrated in colors. Patterns of quarry tiles for floors.

VALVES

- Crane Co.**, 836 S. Michigan Ave., Chicago, Ill.
No. 51. General Catalog. Illustrated. Describes the complete line of the Crane Co.
- C. A. Dunham Co.**, 450 East Ohio St., Chicago.
The Dunham Packless Radiator Valve Brochure, 12 pp., 8 x 11 in. Illustrated. Data on an important type of valve.
- Illinois Engineering Co.**, Racine Ave., at 21st St., Chicago, Ill.
Catalog. 8½ x 11 in. 88 pp. Illustrated.
- Jenkins Bros.**, 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
- Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

VENETIAN BLINDS

- Burlington Venetian Blind Co.**, Burlington, Vt.
Venetian Blinds. Booklet, 7 in. x 10 in., 24 pages. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

VENTILATION

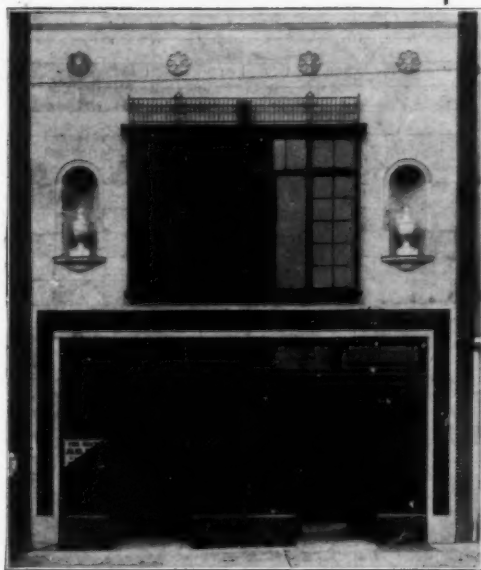
- American Blower Co.**, Detroit, Mich.
American H. S. Fans. Brochure, 28 pp., 8½ x 11 in. Data on an important line of blowers.
- Duriron Company**, Dayton, Ohio.
Acid-proof Exhaust Fans. Folder, 8 x 10½ ins., 8 pp. Data regarding fans for ventilation of laboratory fume hoods.
- Specification Form for Acid-proof Exhaust Fans. Folder, 8 x 10½ ins.
- Globe Ventilator Company**, 205 River Street, Troy, N. Y.
Globe Ventilators Catalog. 6 x 9 in. 32 pp. Illustrated profusely. Catalog gives complete data on "Globe" ventilators as to sizes, dimensions, gauges of material and table of capacities. It illustrates many different types of buildings on which "Globe" ventilators are in successful service, showing their adaptability to meet varying requirements.
- Van Zile Ventilating Corporation**, 155 East 42nd Street, New York, N. Y.
The Ventadoor Booklet. 6½ x 3½ in. 16 pp. Illustrated. Describes and illustrates the use of the Ventadoor for Hotels, Clubs, Offices, etc.

WALLS, INTERIOR

- Zenitherm Co., Inc.**, 390 Frelinghuysen Avenue, Newark, N. J.
Zenitherm Walls. Booklet, 23 pp., 8½ x 11 in. Illustrated. Deals with fine treatment for interior walls.
- Folder of Architectural and Decorative Ornaments Achieved with Zenitherm. Stock baseboards, mouldings, etc.



E. G. Blanke, Baltimore architect, who believes that even a commonplace structure can have some distinction and charm in its exterior.



Stout's Store, Baltimore, Md., which illustrates Mr. Blanke's ideas as to exteriors and roofing. This building has a facade of marble and is covered with Carey Built-up Roofing.

NOTE TO ARCHITECTS:
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Specification Book.

A Marble Front for Beauty ...a Built-up Roof for Lasting Protection

"**E**VEN a simple, commonplace structure can be given an attractive exterior," said Mr. E. G. Blanke, Baltimore architect, "and often at very little extra cost. Take the case of a small extra store wedged in a row of other stores. Even such a building can have a front of some charm and distinction. We accomplish this by building a front of marble or other stone. This photograph illustrates how our ideas were applied in the case of Stout's Store, recently built here in Baltimore. The extra cost of a store front such as this is no way proportionate to the gain in appearance.

"In the matter of roofing for any permanent structure, costs should not count; the best always costs less in the long run. Wherever conditions permit, we use a smooth-surface, felt-and-asphalt roof. Not only is this economical in cost, but it is washed clean by every rain, and, if accidental damage should cause a leak, it is a simple matter to locate it. In addition, the life of such a roof may be doubled, or even more, by recoating with asphalt from time to time."

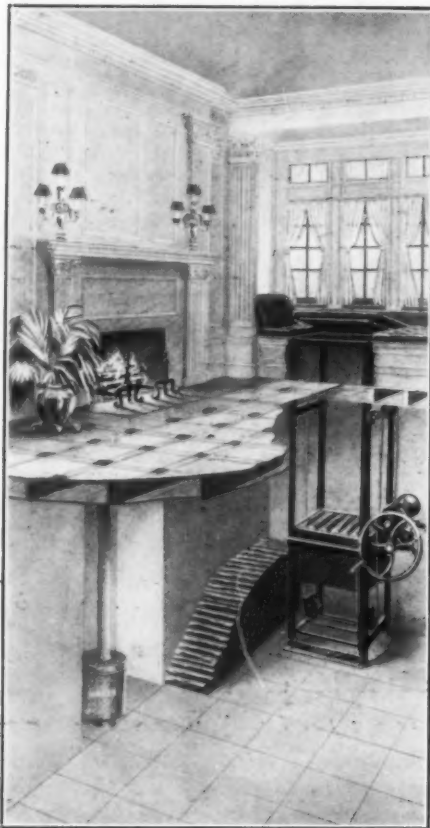
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Lockland, Cincinnati, Ohio

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DESPITE the fact that the cheeriness of the hearth fire is one of the most attractive features of a home, most fireplaces lie cold and dead owing to the inconvenience and untidiness of carrying fuel up the stairs from the cellar and across clean floors and rugs.

This drudgery, offensive alike to master and servant, is eliminated by the Sedgwick Fuel Lift, which supplies wood or coal in usable quantities direct to the fireplace.

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*Manufacturers of "The Invalid Elevator,"
Dumb Waiters, Trunk Lifts, Ash Hoists, Etc.*

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 156

WATERPROOFING

- Carey Company, The Philip, Lockland, Cincinnati, Ohio.
Waterproofing Specification Book. $8\frac{1}{2} \times 11$ in. 52 pp.
- Genfire Steel Company, Youngstown, Ohio.
Waterproofing Handbook. Booklet. $8\frac{1}{2} \times 11$ in. 72 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete. Free distribution.
- A. C. Horn Company, Long Island City, N. Y.
Waterproofing. Folder. $9\frac{1}{2} \times 11\frac{1}{2}$ in. Contains folders giving data on excellent waterproofing and dampproofing materials.
- Master Builders Company, Cleveland, Ohio.
Waterproofing and Dampproofing and Allied Products. Sheets in loose index file, 9×12 in. Valuable data on different types of materials for protection against dampness.
- Ruberoid Co., The, 95 Madison Ave., New York.
Impervite. Circular. $8\frac{1}{2} \times 11$ in. 4 pp. Illustrated. An integral water-proofing compound for concrete, stucco, cement, mortar, etc.
- Sommers & Co., Ltd., 342 Madison Ave., New York City.
"Permantile Liquid Waterproofing" for making concrete and cement mortar permanently impervious to water. Also circulars on floor treatments and cement colors. Complete data and specifications. Sent upon request to architects using business stationery. Circular size, $8\frac{1}{2} \times 11$ in.
- Sonneborn Sons, Inc., L., 116 Fifth Ave., New York, N. Y.
Pamphlet. $3\frac{1}{4} \times 8\frac{1}{4}$ in. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.
- Toch Brothers, 110 East 42nd Street, New York City.
Specifications for Dampproofing, Waterproofing, Enameling and Technical Painting. Complete and authoritative directions for use of an important line of materials.
- The Vortex Mfg. Co., 1978 West 77th St., Cleveland, Ohio.
Par-Lock Specification "Form D" for waterproofing surfaces to be finished with Portland cement or tile.
- Par-Lock Specification "Forms E and G" membrane waterproofing of basements, tunnels, swimming pools, tanks to resist hydrostatic pressure.
- Par-Lock Waterproofing. Specification Forms D, E, F and G. Sheets $8\frac{1}{2} \times 11$ ins. Data on combinations of gun-applied asphalt and cotton or felt membrane, built up to suit requirements.
- Par-Lock Method of Bonding Plaster to Structural Surfaces. Folder, 6 pp., $8\frac{1}{2} \times 11$ ins. Official Bulletin of Approved Products.—Investigating Committees of Architects and Engineers.

WEATHER STRIPS

- Athey Company, 6035 West 65th Street, Chicago.
The Only Weatherstrip with a Cloth to Metal Contact. Booklet, 16 pp., $8\frac{1}{2} \times 11$ ins. Illustrated. Data on an important type of weather stripping.
- Chamberlin Metal Weather Strip Company, 1644 Lafayette Boulevard, Detroit, Mich.
Chamberlin Metal Weather Strip Details, 1925 edition. Catalog $8\frac{1}{2} \times 11$ in. 48 pp. Complete specifications and full-sized details. With or without $9 \times 11\frac{3}{4}$ in. folder conforming to A. I. A. filing system. May also be used in loose leaf form. Excluding Cold and Dust with Chamberlin for 32 years. Booklet $5\frac{1}{4} \times 7\frac{1}{4}$ in. 16 pp. Illustrated. Completely and interestingly illustrates application of Chamberlin equipment.
- Chamberlin Details for Wood Sash and Doors. 50 pp., $8\frac{1}{2} \times 11$ ins. Data and diagrams relating to weather-tight doors and windows.
- Details and Specifications for Calking with Chamberlin Plaster-Calk. Folder, 4 pp., $8\frac{1}{2} \times 11$ ins.
- How Rain, Dust and Cold Are Kept Out. Folder, 10 pp., $5\frac{1}{4} \times 7\frac{1}{4}$ ins. Weatherstripping for Residences.
- The Higgin Manufacturing Co., Newport, Ky.
Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 21 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOWS

- Detroit Steel Products Co., Detroit, Mich.
Blue Book of Steel Windows. Booklet, 128 pp., $8\frac{1}{2} \times 11$ ins. Illustrated. Data on solid rolled steel windows for residential and industrial buildings.
- The Kawneer Company, Niles, Mich.
Kawneer Solid Nickel Silver Windows. In casement and weight-hung types and in drop-down transom type. Portfolio, 12 pp., $9 \times 11\frac{1}{2}$ ins. Illustrated, and with demonstrator.
- David Lupton's Sons Company, Philadelphia, Pa.
Lupton Pivoted Sash, Catalog 12-A. Booklet 48 pp., $8\frac{1}{2} \times 11$ in. Illustrates and describes windows suitable for manufacturing buildings.

WINDOWS, CASEMENT

- Detroit Steel Products Co., Detroit, Mich.
Penetra Residential Windows. Brochure, 24 pp., $8\frac{1}{2} \times 11$ ins. Illustrated. Rolled steel windows for residences and apartments.
- Crittall Casement Window Co., 10951 Hearn Ave., Detroit, Mich.
Catalog No. 22. 9×12 in. 76 pp. Illustrated. Photographs of actual work accompanied by scale details for casements and composite steel windows for banks, office buildings, hospitals and residences.
- Genfire Steel Company, Youngstown, Ohio.
G F Steel Standard Casement Windows, Booklet, 16 pp., $8\frac{1}{2} \times 11$ ins. Data and architectural details of casements.
- Hops & Sons, Henry, 103 Park Ave., New York, N. Y.
Catalog. $12\frac{3}{4} \times 18\frac{1}{4}$ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

Consider these
advantages of the
THATCHER
Round Boiler
when specifying
heating plants



IT'S winter time when the houses you design are put to the test. Ample warmth and comfort—such as a Thatcher provides—assure the complete satisfaction of your clients.

When writing the specifications for the heating plant, consider these few of the many advantages of the Thatcher Round Boiler:—

The Staggered Fire Travel which extracts the heat units from the hot gases and smoke before entering the flue;

Quick Steaming due to equalization of grate surface, fire travel and water circulation;

Drafts, Checks and Dampers respond instantly and automatically to maintain the desired temperature;

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depth of the fire-pot with its large coal carrying capacity;

Low Installation Cost, due to construction of the boiler; making erection easy;

The large feed door which permits easy firing and spreading of fuel to all parts of the fire;

The construction makes it specially suitable for use with an oil burner.

No other boiler possesses *all* of these unusual features—features that assure the highest heating efficiency for the fuel burned and reduce its care and attention to the minimum.

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BOILERS-FURNACES-RANGES



The New Pfaudler Glass-Lined Laundry Chute as it was shown at the recent American Hospital Association Exhibit at Minneapolis, Minn.

A Permanent Safeguard!

When it comes to disposing of soiled linen in a hospital or hotel there is only one safe way of doing it and that is through a laundry chute built for this particular service.

The Pfaudler Glass-Lined Steel Chute is so durably constructed that it will outlast the building irrespective of the quantity of linen that is disposed of daily.

Lined with glass, it is very easy to keep clean. It may be flushed out with water and sterilized with steam, thus preventing foul odors and bacterial formations.

Patients, guests and employees are permanently safeguarded. And as for price we invite your inquiry—you will be agreeably surprised.

THE PFAUDLER COMPANY
Laundry Chute Division Rochester, N. Y.

PFAUDLER

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 158

WINDOWS, CASEMENT—Continued

The Kawneer Company, Niles, Mich.

Kawneer Solid Nickel Silver Windows. In casement and weight-hung types and in drop-down transom type. Portfolio, 12 pp., 9 x 11½ ins. Illustrated, and with demonstrator.

David Lupton's Sons Company, Philadelphia, Pa.

Lupton Casement of Copper-Steel. Catalog C-122. Booklet 16 pp., 8½ x 11 in. Illustrated brochure on casements, particularly for residences.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Casement Window Hardware. Booklet, 24 pp., 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AIR-way Multifold Window Hardware.

Truscon Steel Co., Youngstown, Ohio

Truscon Steel Casements. Booklet, 8½ x 11 in., 24 pp. Handsomely printed with illustrations of houses equipped with Truscon Casement Windows. Illustrations of various units and combinations. Specifications, types and sizes and details of construction.

Architectural Details. Booklet, 8½ x 11 in., 16 pp. Tables of specifications and typical details of different types of construction.

List of Parts for Assembly. Booklet, 8½ x 11 in., 16 pp. Full lists of parts for different units.

WINDOWS, STEEL AND BRONZE

Detroit Steel Products Co., Detroit, Mich.

Blue Book of Steel Windows. Booklet, 128 pp., 8½ x 11 ins. Illustrated. Data on solid rolled steel windows for industrial and residential buildings.

Fenestra Residential Windows. Brochure, 24 pp., 8½ x 11 ins.

Illustrated. Rolled steel windows for residences and apartments.

Fenestra Architectural Windows. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Data on projected and counter-balanced rolled steel windows.

David Lupton's Sons Company, Philadelphia, Pa.

A Rain-shed and Ventilator of Glass and Steel. Pamphlet, 4 pp., 8½ x 11 in. Deals with Pond Continuous Sash, Sawtooth Roofs, etc.

How Windows Can Make Better Homes. Booklet, 3¼ x 7 in., 12 pp. An attractive and helpful illustrated publication on use of steel casements for domestic buildings.

Truscon Steel Company, Youngstown, Ohio.

Truscon Mechanical Operators for Steel Windows. Brochure, 8½ x 11 in., 65 pp. Complete description of various kinds of installations with drawings of details.

Drafting Room Standards. Book, 8½ x 11 in., 120 pages of mechanical drawings showing drafting room standards, specifications and construction details of Truscon Steel Windows, Steel Lintels, Steel Doors and Mechanical Operators.

Daylighting and Ventilating Power Houses. 32-pp. booklet, 8½ x 11 in., illustrating the economical application of Truscon Windows in modern power house design.

Truscon Solid Steel Double-Hung Windows. 24-pp. booklet, 8½ x 11 in., containing illustrations of buildings using this type of window. Designs and drawings of mechanical details.

Truscon Donovan Awning Type Steel Windows. 12-pp. booklet, 8½ x 11 in., illustrating typical installation and giving construction details.

WOOD—See also Millwork

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.

American Walnut. Booklet, 7 x 9 in., 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture makers from the time of the Renaissance down to the present.

"American Walnut for Interior Woodwork and Paneling." 7 x 9 in. pages, illustrated. Discusses interior woodwork, giving costs, specifications of a specimen room, the different figures in Walnut wood, Walnut floors, finishes, comparative tests of physical properties and the advantages of American Walnut for woodwork.

Curtis Companies Service Bureau, Clinton, Iowa.

Better Built Homes. Vols. XV-XVIII, incl. Booklet, 9 x 12 in., 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects, for the Curtis Companies.

Long-Bell Lumber Co., Kansas City, Mo.

The Perfect Floor. Booklet 5¼ x 7¼ in., 16 pp. Illustrated. Valuable for the data given on the use of wood for floors.

Saving Home Construction Costs. Booklet 4¼ x 7¼ in., 24 pp. Discusses economy and value in domestic building.

Experiences in Home Building. Booklet 6 x 9 in., 16 pp. Records the testimony of a number of builders and contractors as to the value of certain materials.

The Post Everlasting. Booklet 8 x 11 in., 32 pp. Illustrated. Describes the production of posts and their use in various ways.

West Coast Lumber Trade Extension Bureau, Seattle, Wash.

"Durable Douglas Fir; America's Permanent Lumber Supply." Booklet, 32 pp., 7 x 11 ins. Illustrated. Complete data on this valuable wood.

"Douglas Fir Wall Hanger." Metal-bound hanger, 31 x 32 ins. An attractive advertisement for Douglas fir.

"Where to Use Douglas Fir in Your Farm." Brochure, 32 pp., 6 x 9 ins. Data on use of this wood for farm buildings.



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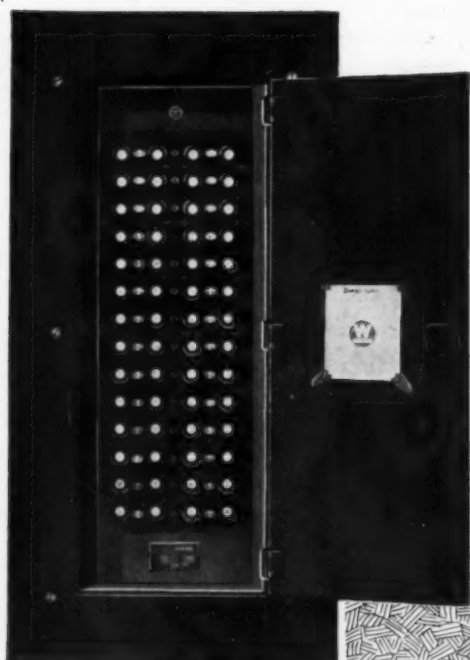
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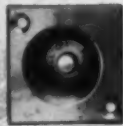
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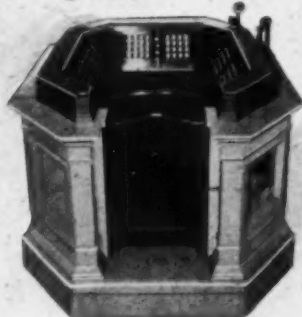
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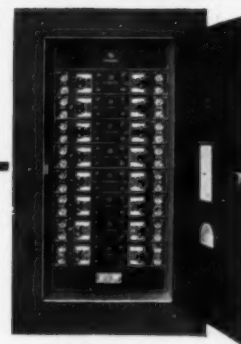
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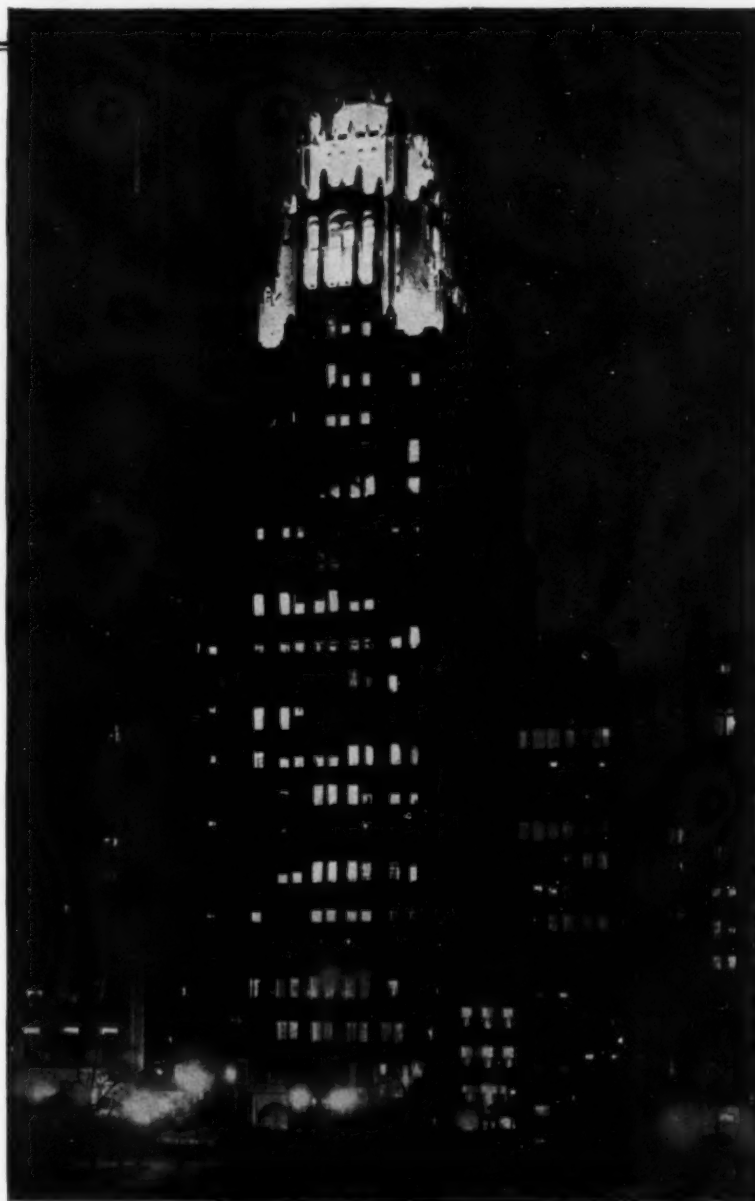
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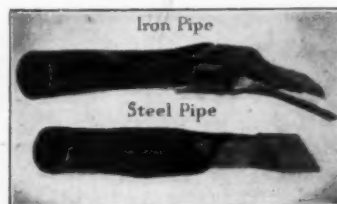
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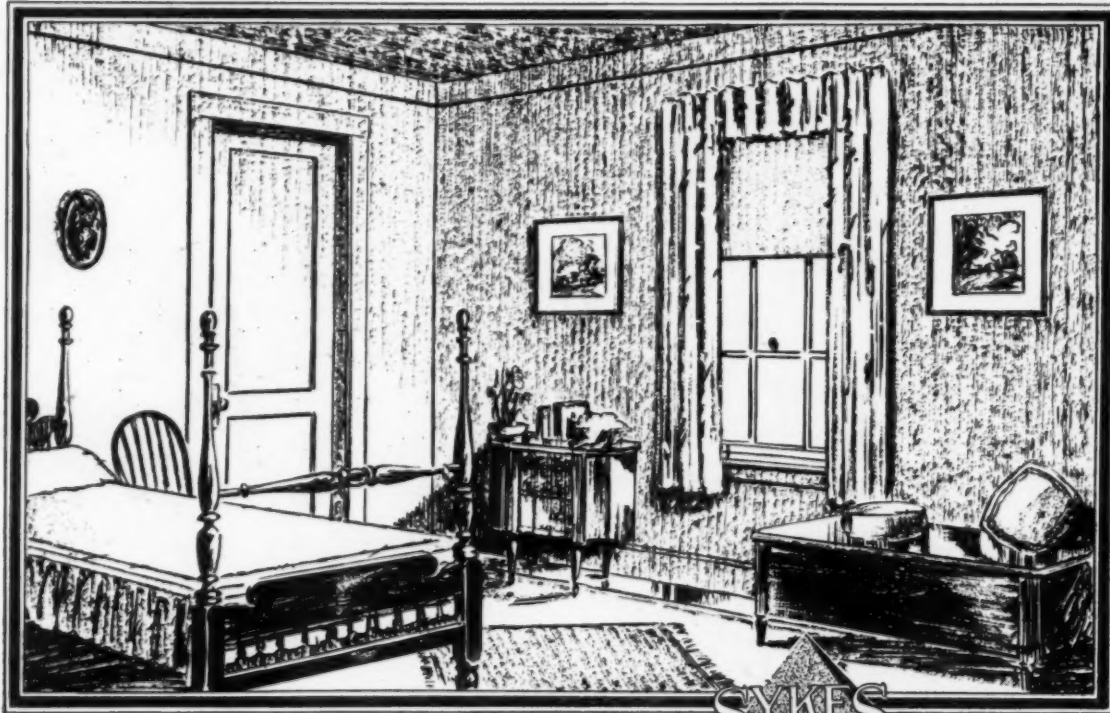
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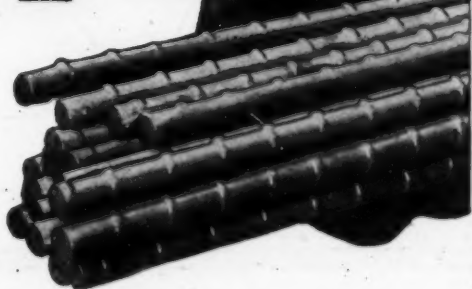
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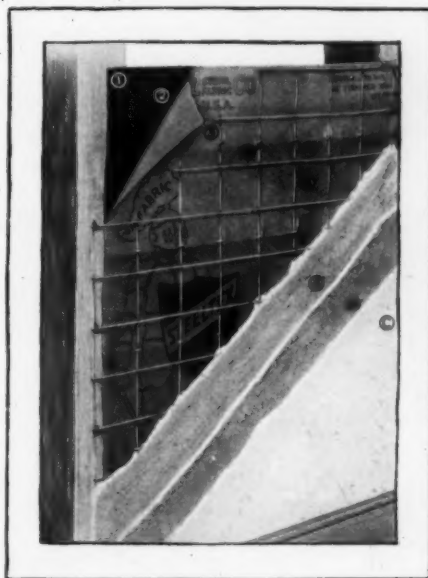
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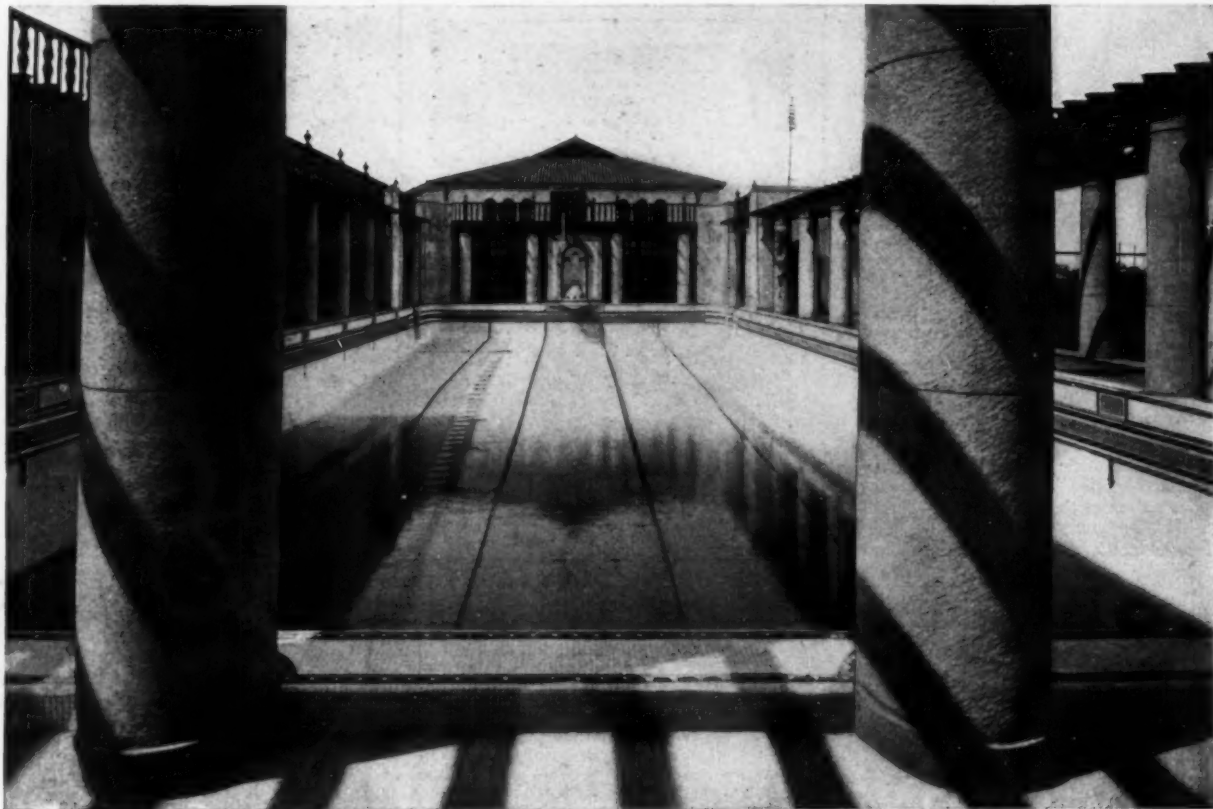
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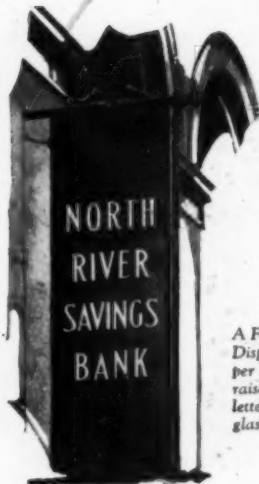
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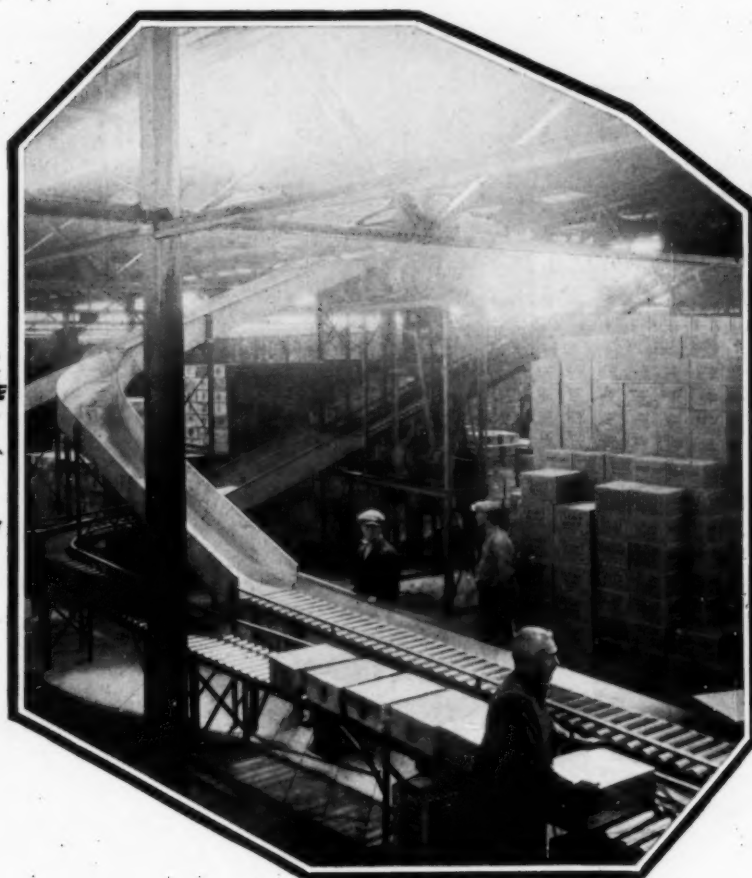
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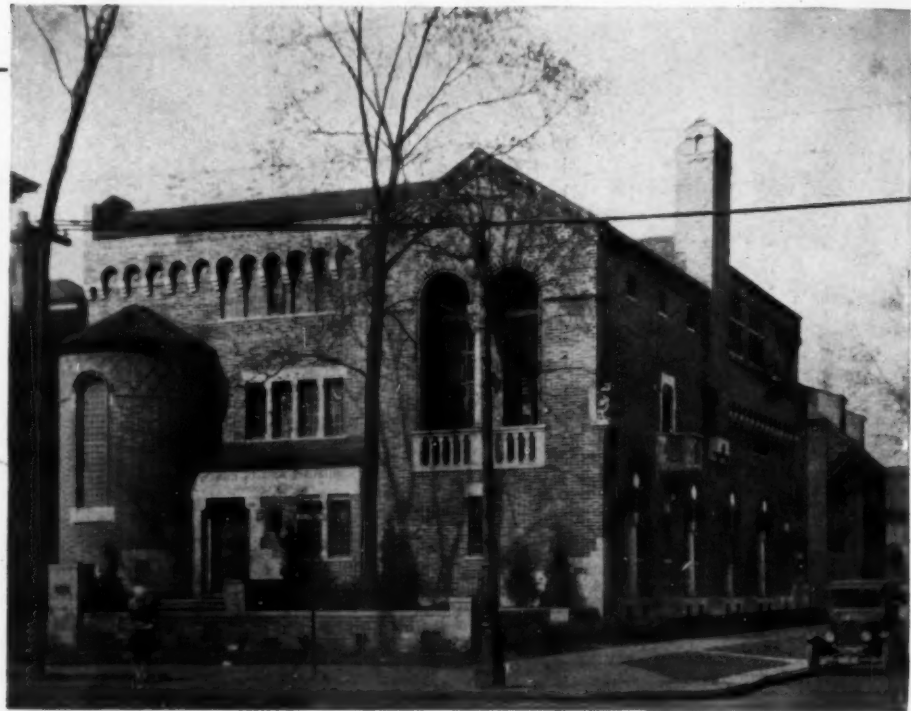
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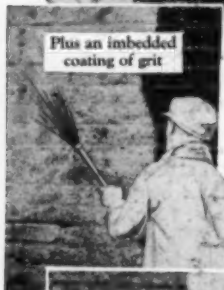
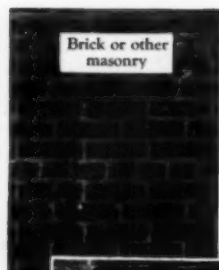
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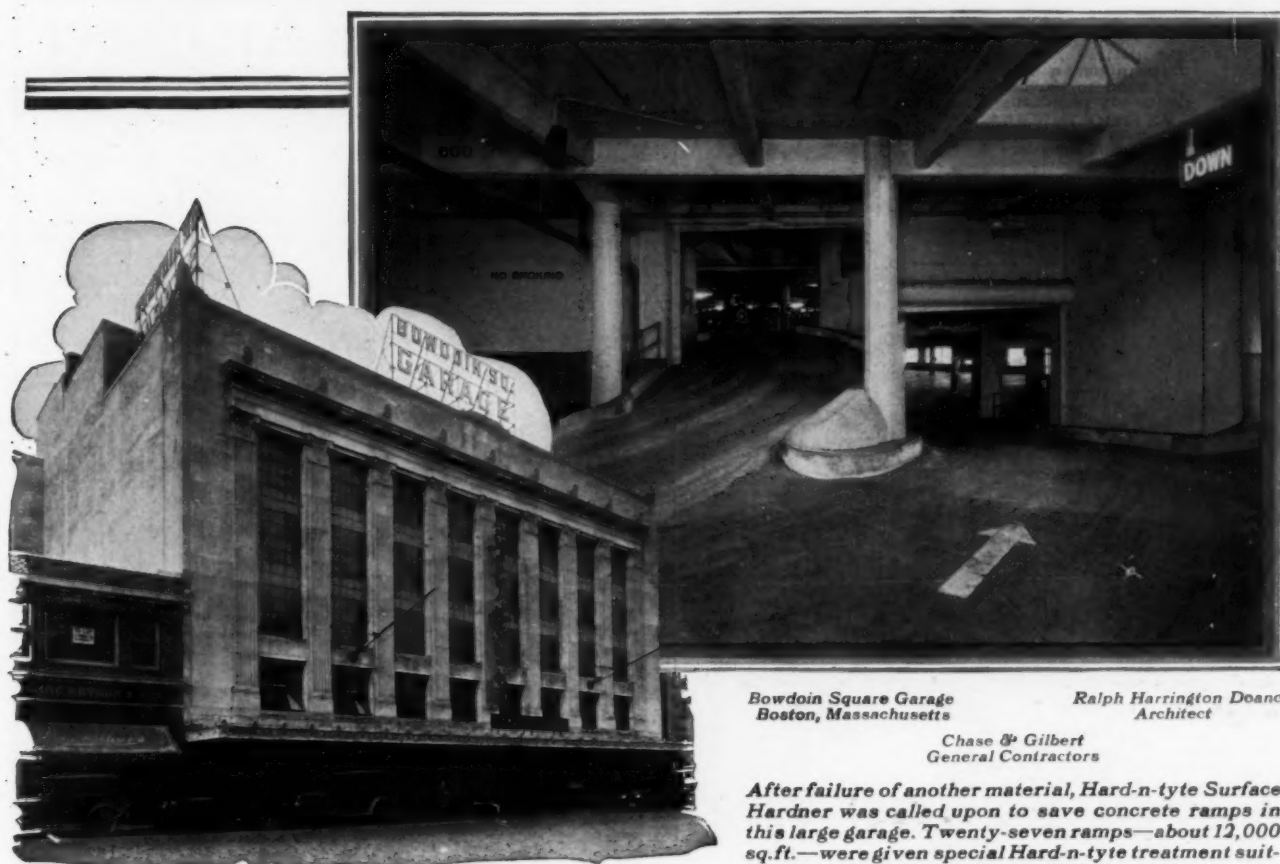
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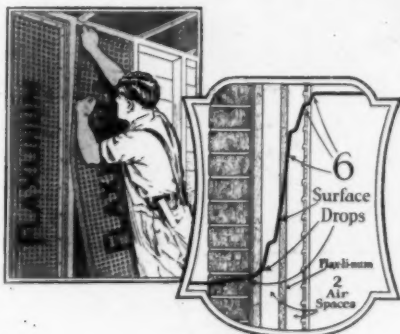
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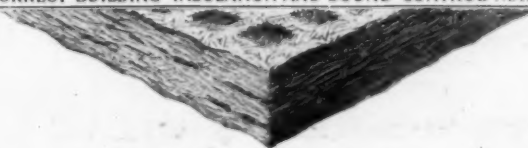
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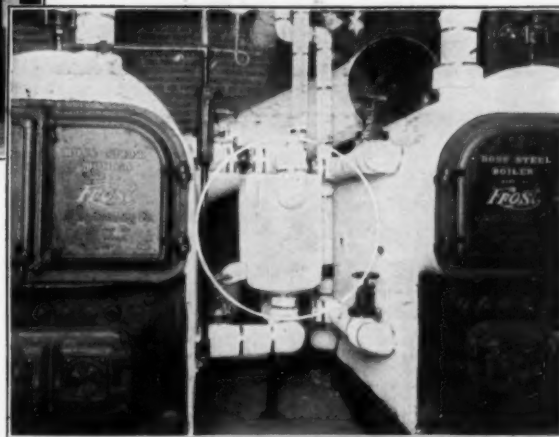
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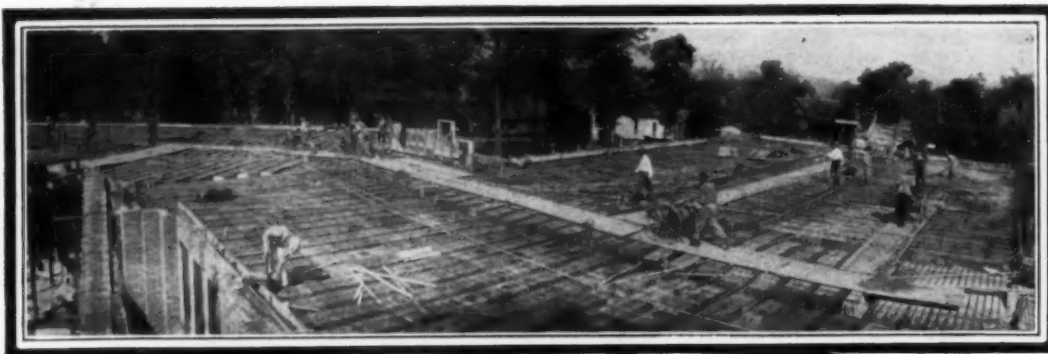
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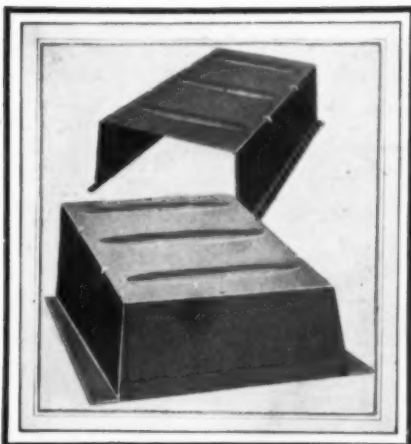
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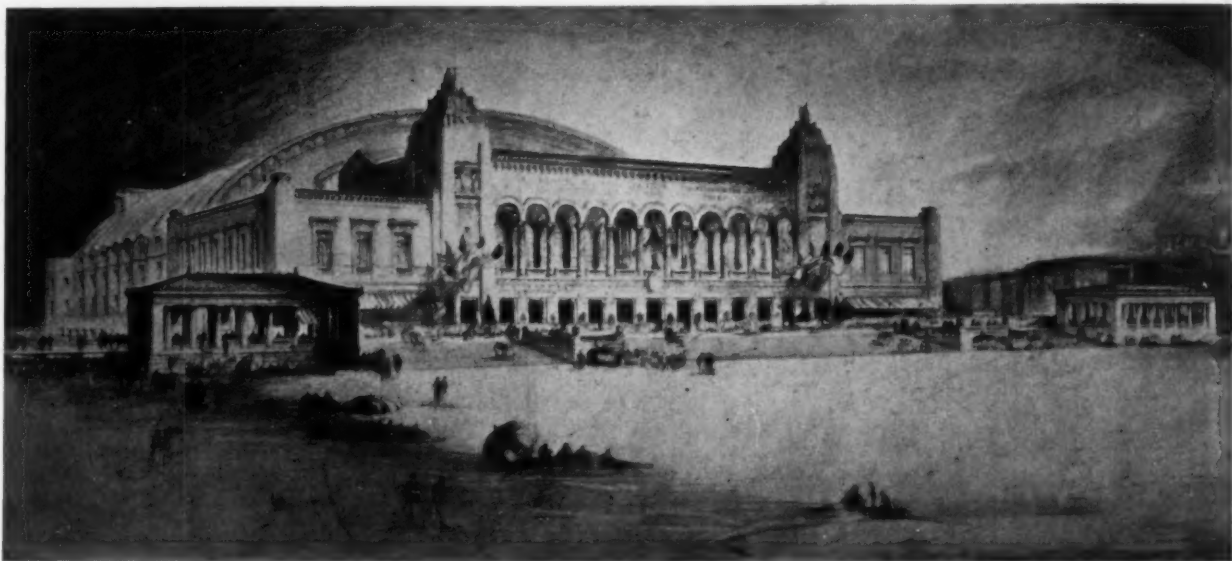
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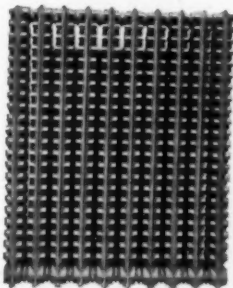


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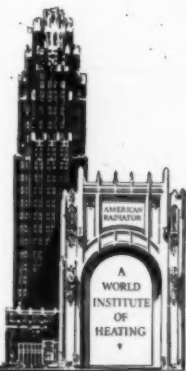
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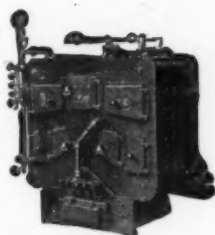
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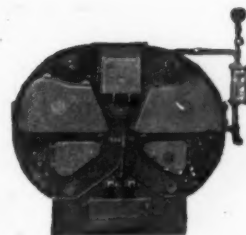
Spencer No. 1 Single Grate Heater, capacity in direct cast iron radiation equivalent, water, 800 to 1450 square feet; steam or vapor, 500 to 900 square feet.



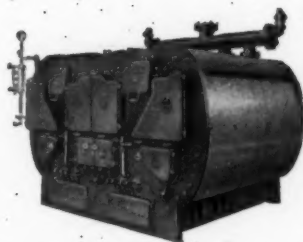
Spencer No. 2 Double Grate Heater, capacity in direct cast iron radiation equivalent, water, 1750 to 3800 square feet; steam, 1100 to 2350 square feet.



Spencer Tubular Steam Heater—15 to 21 Series—capacity in direct cast iron radiation equivalent—1900 to 3600 square feet.

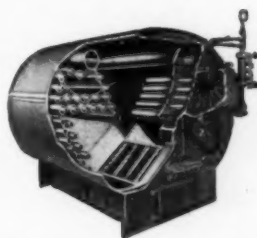


Spencer Tubular Steam Heater—50 Series—capacity in direct cast iron radiation equivalent 4500 to 7000 square feet.



Left—Spencer Tubular Steam Heater—100 Series—capacity in direct cast iron radiation equivalent 7500 to 15000 square feet.

Right—Interior view showing construction principle.



All Spencer Heaters may be hooked up in battery where a flexible supply of heat is needed, or where the total radiation tax is greater than the capacity of a single boiler.



HEAT WITH UNIT HEATERS



Five times as efficient as ordinary radiation. Delivers from 450 to 900 cubic feet of hot air per minute. Cheaper to buy, install and operate.

A new small Venturafin Unit (Size No. 2) for stores, offices, shops, garages, factories, showrooms, warehouses, depots, and countless other places.

Ventilates as it heats—gives positive heat control and more even distribution of heat in working areas—and is pleasing in appearance.

One-quarter the weight of an equivalent amount of radiators, wall coils, etc., and occupies only one-tenth the space.

Heats up in a jiffy in the morning. Reduces heat losses to a minimum. Forces heat where you want it, when you want it.

Send for free catalogues and descriptive folders

AMERICAN BLOWER COMPANY
BRANCH OFFICES IN PRINCIPAL CITIES
CANADIAN SIROCCO COMPANY, WINDSOR, ONTARIO

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[688]

VENTILATING, HEATING, AIR CONDITIONING, DRYING, MECHANICAL DRAFT

Manufacturers of all Types of Air-Handling Equipment — Since 1881

UNIVENT and Glass—*make the difference*



TO TRY to ventilate the office building through open windows has proven futile. On still days little air comes in. On other days blustering winds bring in smoke, soot, snow and the distracting noise of a great city. As the lesser of two evils windows are closed, and the workers suffer the inevitable results of stuffy air: lassitude and lowered efficiency.

The Univent solves the problem. It brings into the office outdoor air, cleans it, heats it when necessary, and diffuses it to every nook and cranny of the room—with invigorating air motion, but without draft.

No 4 o'clock let down, no fluttering papers, no cold inducing drafts—winter or summer—in the Univent-ilated room.

Labor—either mental or physical

—is the most expensive thing in the world. Eliminate mistakes—keep employees healthy and productive by



*Union Electric Light & Power Bldg., equipped with . . .

UNIVENT

(TRADE MARK)

VENTILATION

giving them the invigorating air conditions that keep everyone from executive to office boy mentally and physically alert.

The Univent is not an exhaust system—it is real outdoor ventilation indoors—with dust and noise left out.

Architect and heating engineer should know why the Univent is endorsed by building managers, business executives, and school authorities as the most economical, flexible, and easiest controlled ventilating system known. A request on your letterhead for Architect's Edition of "Univent Ventilation" will bring you some interesting facts.

*Union Electric Light & Power Bldg.
St. Louis, Mo.

Partnership Estate of Albert B. Groves,
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Manufactured only by THE HERMAN NELSON CORPORATION, Moline, Ill.

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KANSAS CITY
DENVER
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SPOKANE
PORTLAND

SEATTLE
VANCOUVER
TORONTO
WINNIPEG, MAN.

Anybody would like this Tico Boiler installation

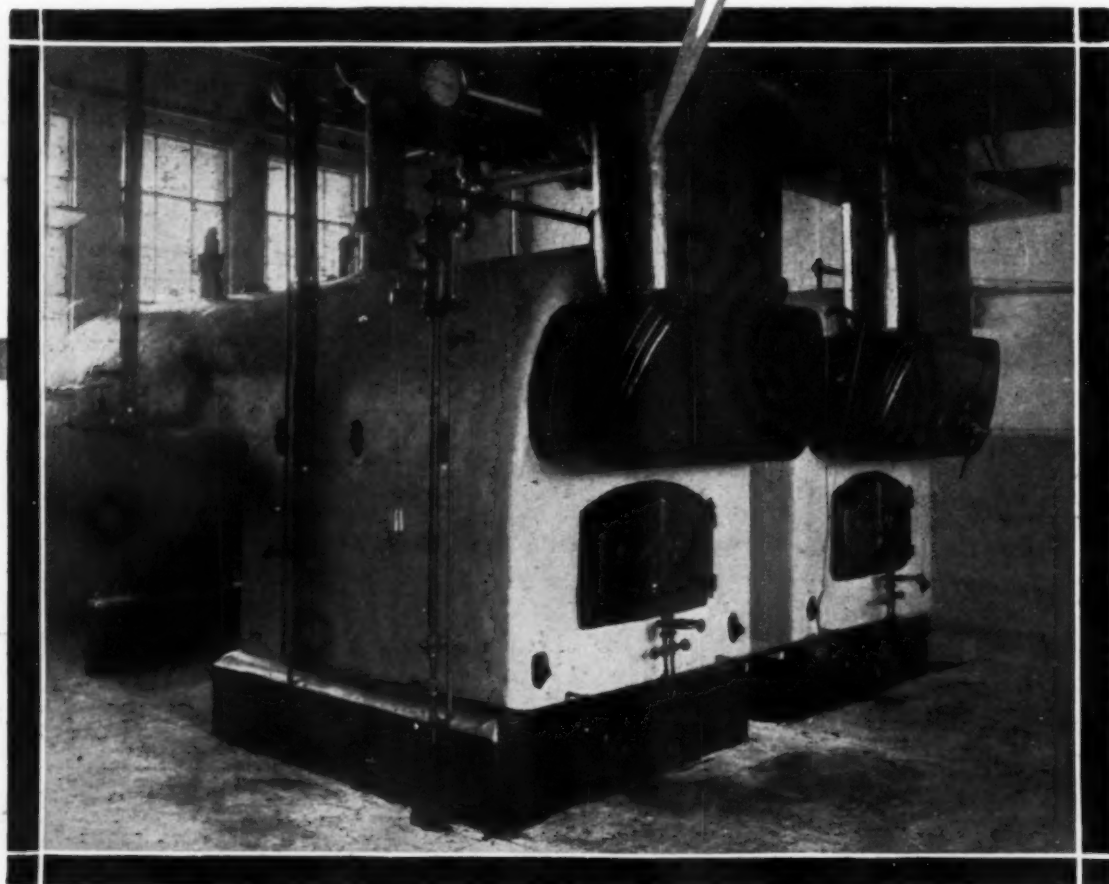
JUST notice the neat and compact design of these two TICO Boilers recently installed for the new Seybolt Bakery in Tampa, Florida, by the A. W. Dovel Company, and you'll agree that TICO builds 'em right.

These boilers are gas-fired. The tubing is seamless and the general design and construction more than meets the strict A.S.M.E. code.

No matter what fuel you use there's a TICO Boiler scientifically designed to meet your exact requirements best.

Why not inquire?

THE TITUSVILLE IRON WORKS COMPANY
Titusville - - - Penna.



Now see what WILLIAMS has done to OIL-O-MATIC

A NEW Oil-O-Matic is now available. One that surpasses even the former model which brought world leadership. For the past three years more than twice as many home-owners selected it as any other make.

Better than ever, the complete range of oil fuels may be used with equal facility. And notably cheap Fuel Oil—so rich in heat value—that makes Oil-O-Matic the lowest in operating cost. This exceptionally wide choice of fuel assures a never-failing supply.

In design and workmanship, Model J sets a new standard in oil burner excellence. Of course, the fundamental principles that have kept Oil-O-Matic so far in advance of the front ranks, are all rigidly followed. Built with watch-like precision and finished in effective French blue, it lends distinction to any heating equipment.

New sturdiness has been built into it. Compactness and simplicity heretofore thought impossible. The automatic operation of the burner is regulated by a unique device with but one moving part

—and that a highly polished steel ball! Even the electrical switches are hermetically sealed in glass to insure dust-free contacts. New quiet and lack of vibration are achieved by a rubber cushion under the motor which is built exclusively for this one model.

To architects and builders, Model J offers a tremendous opportunity. In whatever type of building you are interested this remarkable new oil burner meets the most exacting heating requirements. Write today for "Specifying Oil Heat." The coupon below brings it to you free and postpaid.

Williams Oil-O-Matic Heating Corp.

Bloomington, Illinois

Please send us without obligation a copy of "Specifying Oil Heat." AF127

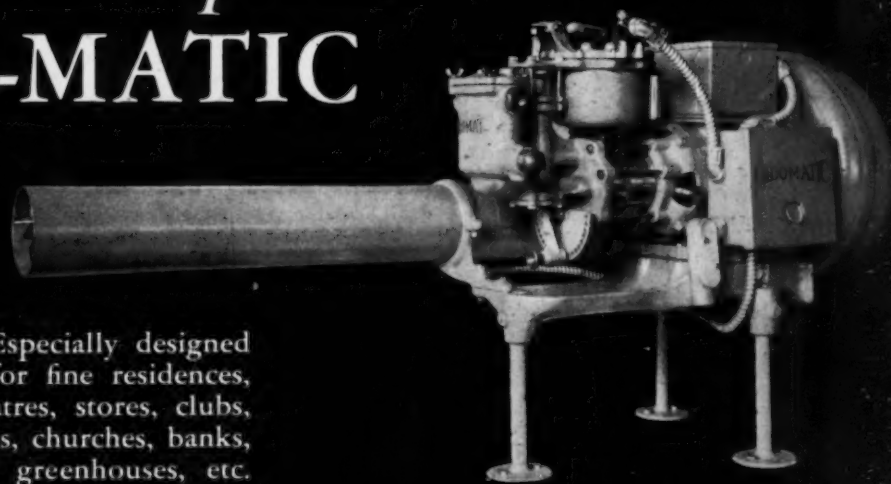
Name

City..... State.....

WILLIAMS OIL-O-MATIC HEATING

*After 8 years of success
Now a new improved*
OIL-O-MATIC

Model J Especially designed
for fine residences,
apartments, theatres, stores, clubs,
schools, hospitals, churches, banks,
offices, garages, greenhouses, etc.



The Dunham Differential Vacuum Heating System



Based on Bed-Rock Laws of Physics

THE OPERATING principle upon which the Dunham Differential Vacuum Heating System is established is a bed-rock law of physics.

Engineers know this law as the Steam Table. Simply stated, it is that "the boiling point of a liquid is the temperature at which the pressure of the saturated vapor first becomes equal to the pressure existing outside." (Millikan.) Professor Millikan further states: "Since the boiling point has been defined as the temperature at which the pressure of the saturated vapor is equal to the outside pressure, and since the pressure of a saturated vapor varies rapidly with the temperature, it follows that the boiling point must vary as the outside pressure varies."

Due to the workings of this law it is possible to produce steam of greatly varying temperatures in a Dunham Differential Vacuum Heating System simply by varying the pressure to which the water in the boiler is subjected. This is mechanically accomplished by means of the Dunham Differential Vacuum Pump.

The importance of the Dunham application of this basic law of physics to the solution of one of the greatest problems of heating cannot be overestimated. During 95% of the heating season ordinary steam heating systems overheat because steam at 212 degrees or higher is circulated in



the radiators and piping. No provision is made, nor can any be made, in such heating systems, to regulate the heat emission from the radiators to conform to the heat loss from the building. Consequently, windows are thrown open to cool the overheated rooms, and a heavy fuel waste results.

The Dunham Differential Vacuum Heating System combats this waste by utilizing steam produced at varying sub-atmospheric pressures. This sub-atmospheric steam is maintained at the proper pressure, and temperature, to provide comforting warmth in every room, with an input of heat into the radiators sufficient to compensate for the heat loss from the building, but without the overheating common to ordinary heating systems.

No new principle is used to attain this long-sought goal. The principle is as old as the very atmosphere which surrounds our earth. The Dunham devices which utilize this important principle are, however, new, attention-compelling and revolutionary.

They have made the Dunham Differential Vacuum Heating System the outstanding heating development of the decade, and one destined to work as radical a change in present-day heating methods as did the Dunham Thermostatic Radiator Trap when it revolutionized steam heating a quarter century ago.

Look for the Name
DUNHAM

This nameplate identifies a
genuine DUNHAM
Radiator Trap



U. S. Patent No. 1644114. Additional patents in the United States,
Canada and Foreign Countries now pending

C. A. DUNHAM CO.

DUNHAM BUILDING

450 East Ohio Street, Chicago

Over seventy branch
and local sales offices
in the United States,
Canada and the United
Kingdom, bring Dun-
ham Heating Service
as close to you as your
telephone.

Consult your telephone
directory for the ad-
dress of our office in
your city. An engineer
will counsel with you
on any project.

The Dunham Differential Vacuum Heating System



Architect:
Merritt J. Morehouse, Chicago

Heating Contractors:
Hunter-Peel Co., Battle Creek

1866

The Battle Creek Sanitarium

1927

DUNHAM HEATING SERVICE is a national service. Also it services many national institutions. Among such is the Battle Creek Sanitarium which, from its beginning in a two-story house sixty-one years ago, has developed into the group of buildings shown in the oval and having a world-wide recognition of leadership in the science of "artificial sunlight" for therapeutic purposes. To the six-story Main Building, Main Annex, Hospital, Dormitories, Gymnasium and Recreational Centre, Maintenance Buildings, etc., is now added the magnificent

New 15 Story "Central Building"

here shown. If not already in operation as you read this page, it will be in occupancy very shortly. The new structure will harmonize with the other buildings and is located at the south end (right) of the main building shown in oval. The ground floor, to be used for lobbies, offices and other purposes, is two stories in height. The next floor on a level with the first floor of the present main building will be used for parlors, lounges and writing rooms; the remaining twelve stories will be the guest floors.

Devoted to scientific health training, the Sanitarium very



U. S. Patent No. 1644114
Additional patents in the United States,
Canada and foreign countries now pending.

analytically investigated the "heat" question for the new Central Building and selected and installed a Dunham Differential Vacuum Heating System. With expert physical and dietary direction the Sanitarium offers a delightful environment as a vacation spot. It is so used by an ever increasing number of congenial folks from all sections of the country. Already this year no less than 7,000 persons have been registered as guests.

The name of Dr. John Harvey Kellogg, who has actively managed the Sanitarium for half a century, is a synonym of "Battle Creek." With him are associated Dr. Charles E. Stewart and M. W. Wentworth, with a corps of able assistants and 1,500 employees.

C. A. DUNHAM CO.

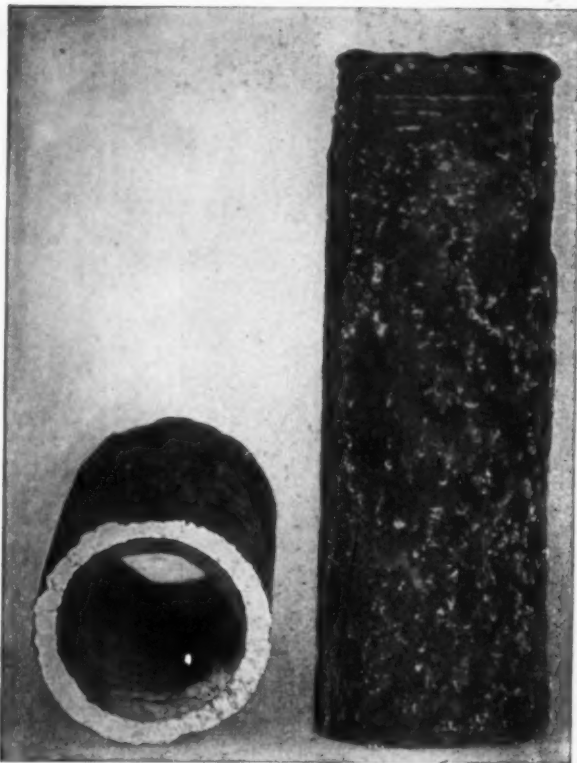
Dunham Building

450 East Ohio Street • • • Chicago

Over seventy branch and local sales offices in the United States; Canada, and the United Kingdom bring Dunham Heating Service as close to you as your telephone.

Consult your telephone directory for the address of our office in your city. An engineer will counsel with you on any project.

51 Years of Use Shows No Deterioration



Pipe in use underground in Lynn, Mass., from 1874 to 1925. Removed when building was torn down. Exterior badly corroded, interior clean and of original diameter.

Typical of what may be expected of CEMENT LINED PIPE

Costs one-half as much
as brass.

Used by ninety-four cities and towns with corrosive waters for service lines under permanent streets.

CEMENT LINING now furnished by Cast Iron Pipe manufacturers in pipe to be used for corrosive waters.

Standard Fittings only are used. Furnished with a special shaped lead lining for making perfect contact with cement lining in pipe.

CEMENT LINED PIPE in buildings for cold water lines is economical and permanent. It serves equally well for hot water and most acids.

CEMENT LINED PIPE CO.
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**VALVES, FITTINGS, TOOLS for
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When the "Ventadoor" is used the tops of all doors can be made to "line up," yet cross ventilation is not sacrificed.

**VAN ZILE VENTILATING
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NEW YORK CITY

COHOES



Only *Genuine* Wrought-Iron Pipe Is Dependable

If the wrought-iron pipe is *Genuine* it will be durable, long lasting; for *Genuine* distinguishes the formula of puddling and Cohoes has never deviated from the original. Therefore Cohoes — Guaranteed *Genuine* Wrought Iron Pipe since 1854.

The Handbook, Pipe Facts contains valuable information. We have a copy for you; send for it.

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Apartment Hotel,
N. Y. C.
Emery Roth, Architect
Guaranteed Plumbing
& Heating Corporation
Plumbing Contractor

COHOES ROLLING MILL CO., COHOES, N. Y.

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CHICAGO
BOSTON

BRANCH OFFICES:
LOS ANGELES
NORFOLK

NEW YORK
FORT WORTH

CLEVELAND
FORT WAYNE



THE DRAKE APARTMENT HOTEL
 NEW YORK CITY
Architect: Emery Roth
Engineers: Jaro & Baum
Plumbing and Heating Contractors:
 Geo. E. Gibson Co.

Where millions are invested—

In ultra modern structures such as this—a monument to architectural and engineering skill—no chance can be taken in specifications—dependability only can be considered! Towering with magnificent lines over twenty stories from the street, this charming hotel-apartment is the result of care and precision in the selection of materials of proven worth—equipment of lasting durability and quality.

Thus, "NATIONAL" Pipe, as in other great buildings, was specified for the major pipe tonnage. Back of all the many luxuries and comforts which this fine housing will offer will be miles and miles of "NATIONAL"—to serve faithfully for many years to come.

NATIONAL TUBE COMPANY

Frick Building, Pittsburg, Pa.

NATIONAL

"We have specified Duriron since 1921"



JAMESON-MEMORIAL-HOSPITAL
NEW CASTLE, PENNA.

W. G. ECKLES CO
ARCHITECTS
NEW CASTLE, PA.

August 19, 1927

SINCE 1921
Over six hundred Architects and Engineers have specified Duriron Drain Pipe for the acid waste systems of hospital, school, college, industrial and commercial structures.

The Duriron Company, Inc.
Dayton, Ohio.

Gentlemen:

We have specified Duriron for laboratory wastes in all the schools which we have designed since 1921. It has been very satisfactory.

Duriron was specified by us for three high schools and a hospital which are now under construction.

Yours truly,

W. G. ECKLES COMPANY

W. G. Eckles

RAE:M



MIDLAND-HIGH-SCHOOL
MIDLAND, PENNA.

Duriron is produced only by

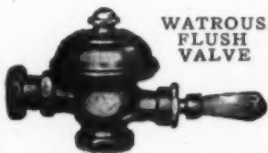
***The* DURIRON COMPANY**
DAYTON · OHIO

The Exact Length of Flush for Every Make of closet

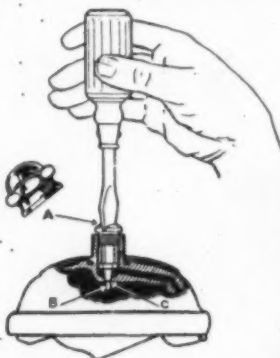
is assured with the

Watrous FLUSH VALVE

THE Watrous flush valve is the only design that makes proper provision for adapting the quantity of water consumed to the needs of any bowl with which it is used. The result is maximum flushing efficiency and economy in water consumption.



WATROUS
FLUSH
VALVE



A Simple Turn of a Screw

By merely turning the screw A (see sketch), the valve is adjusted to the requirements of the bowl. It is not necessary to turn off the water, or remove any of the working parts of the valve to make this adjustment.

The adjustment, once made, remains permanent.

Clogging Prevented

Every time the valve is flushed, the plunger (B) is raised off its seat (C), leaving an opening through which grains of sand, etc., can be washed out of the port. No type of flush valve, without this or a similar safeguard, is immune from obstruction.

No Regulation Required

The feature just described—control of the quantity of water supplied to the bowl—should not be confused with regulation for varying degrees of pressure. The Watrous Valve requires no regulation, from highest pressure down to approximately 5 lbs.

Write for full details

PLUMBING DIVISION

Watrous Flush Valves—Duojet Closets—Self-Closing Basin Cocks—Combination Lavatory Fixtures—Pop-Up Wastes—Liquid Soap Fixtures—Etc.

Sold by leading plumbing jobbers throughout the U. S.

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Complete MILVACO HEATING SYSTEM installed in this modern Apartment~

for over a quarter of a Century manufacturers of
Standard Valves and Heating Specialties



Milvaco
Thermostatic
Trap

Architect: Rissman & Hirschfeld
Mechanical Engineer: Walter C. Ellis
General Contractor: Avery Brundage Co.
Heating Contractor: Crosby & Beard

ABOVE is pictured the new 2440 Lake View Apartment Building, Chicago, Ill. Practical knowledge and careful consideration on the part of the entire building personnel dictated that Milvaco equipment be used.

Heating Specialties:

Milvaco Traps, Dole Milvaco Packless Valves—all types. Air Vents, Air Eliminators, Drip Traps, Blast Traps, Direct Return Traps.

Standard Valves:

Packed Type Radiator Valves, Gate Valves, Globe Valves, Angle Valves, Check Valves.

MILWAUKEE VALVE CO.

Milwaukee, Wisconsin

Winding up a year of Achievement in the Heating Field

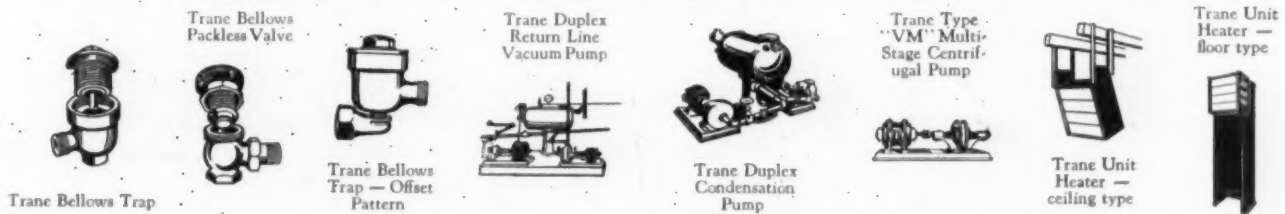
The year now closing has proved more than ever, the value of the Trane policy of engineering development in the specialized branches of heating covered by the Trane line.

Last year, and again this year, The Trane Company has brought forward one improvement after another, in every department.

Trane Heat Cabinets and Concealed Heaters have entered their second heating season, securely entrenched in the estimation of heating men as "Successors to the Radiator."

The same principle has been applied to unit heaters of unique design and exceptional efficiency. The Type "VM" Multi-Stage Centrifugal Pump has been added to the Trane-built line. New-type traps

have been perfected for special uses. Many architects find that the simplest way to be sure of obtaining the most advanced type of equipment is to specify "Trane."



Trane Bellows Trap

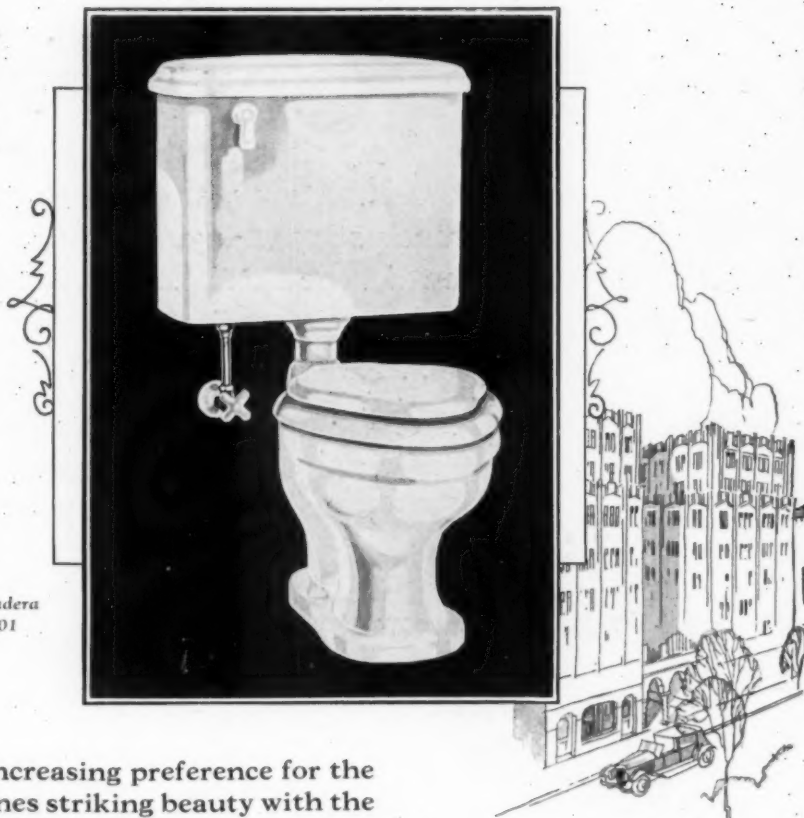
Trane Bellows
Packless ValveTrane Bellows
Trap — Offset
PatternTrane Duplex
Return Line
Vacuum PumpTrane Duplex
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PumpTrane Type
"VM" Multi-
Stage Centrif-
ugal PumpTrane Unit
Heater —
ceiling typeTrane Unit
Heater —
floor type

Write for A. I. A. — Indexed Material.

THE TRANE COMPANY, (Established 1885)
276 CAMERON AVENUE LA CROSSE, WISCONSIN

HEAT TRANE CONCEALED
CABINETS HEATERS
PUMPS AND HEATING SPECIALTIES

Specified for its outstanding superiority



The Madera
K-3001

Architects are showing an increasing preference for the "Madera" because it combines striking beauty with the most perfect sanitation possible in a fine water closet.

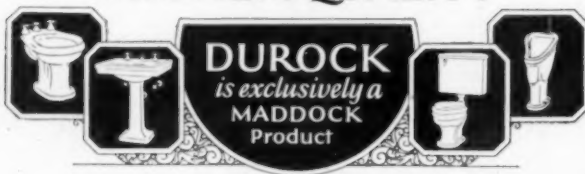
Its very large water surface and extra long seat opening prevent the soiling of dry surfaces by people of any stature. Its gleaming white vitreous china DUROCK bowl and tank, with glass-hard, fused-in surface, can never crack, craze or stain, or offer obstinate lodging places for bacteria. All debris, even including the sanitary pad, is positively carried off through the Madera's greater trapway by its powerful twin siphon-jets.

The "Madera" is ideal for installation in residences, hotels, office buildings, apartments and building developments

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DUROCK Bathroom Equipment
TRENTON, N.J.

MADDOCK

Since 1859 — No Name has stood for
HIGHER QUALITY



THE LARGEST MANUFACTURERS OF TOILET SEATS IN THE WORLD



Evernu
Everlasting Hard Rubber
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Where hard usage is to be expected and long-term economy is important

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Chicago, many others
New York Yacht Club
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The patented Evernu process by which these handsome hard rubber seats are formed, can't be duplicated. It gives them unsurpassed ability to *keep* their good looks through long years of severest service — no scarring, chipping or cracking that smooth, glossy surface; no warping, no loosening of hinges. The *hollow center* gives unusual lightness and unequalled strength.

No wonder leading architects are specifying Evernu Seats for big installations all over the country — schools, hospitals, clubs, office buildings — with perfect confidence that they are giving their clients the best possible value for their money.

Our new catalogs covering all Never-Split Seats — *the only complete line on the market* — should be in your files. A post-card request will bring them promptly.

NEVER SPLIT SEAT COMPANY
Founded 1905
DEPT. 1212 EVANSVILLE, INDIANA, U. S. A.



**NEVER-SPLIT "Perma-White"
and "Coloro" Sheet Pyralin
Covered Seats
are creating a sensation!**

These beautiful new seats, covered with an extra-heavy sheet of snowy white or tinted pyralin, make it possible for the first time, to achieve completely harmonious decorative effects in bathrooms. Furnished in any color desired — pastel blues, greens, yellows, or in brighter shades and combinations.
The pure white "Perma-White" Seats are easily cleaned, stainless and guaranteed.

NEVER-SPLIT SEATS

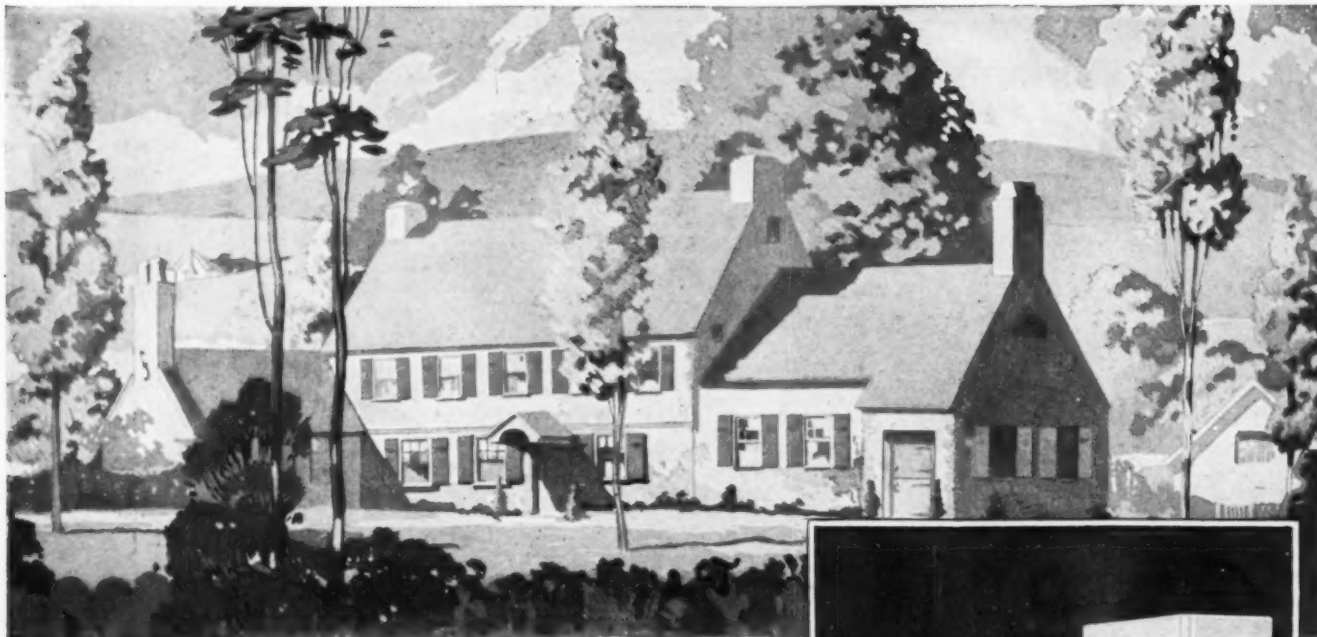
"Perma-White"
Sheet Pyralin

"Coloro"
Tinted Sheet Pyralin

"Evernu"
Hard Rubber

White "Duco"
Sprayed Pyralin

Varnished Wood
Patented Construction



The Improved **QUIET** **SI-WEL-CLO**

**Not Only Sanitary
but Hygienic**

THE Si-wel-clo, like all Te-pe-co closets, has always embodied the latest advances of sanitary engineering. The quietness of its operation has always been an acceptable attribute of this closet de luxe.

The Improved Si-wel-clo is unquestionably the greatest advance in water closet construction of recent years. It is the most comfortable, hygienic, sanitary and quiet closet that has ever been devised. The decided dip in the rim elevates the front and rear of the bowl opening, minimizing the possibility of soiling.

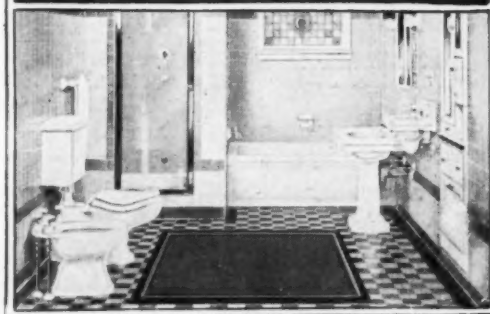
The Si-wel-clo is typical of the entire line of Te-pe-co All-Clay Plumbing Fixtures—closets, baths, lavatories, etc.—sanitary, durable and of irreproachable distinction.

*Folders describing this closet combination
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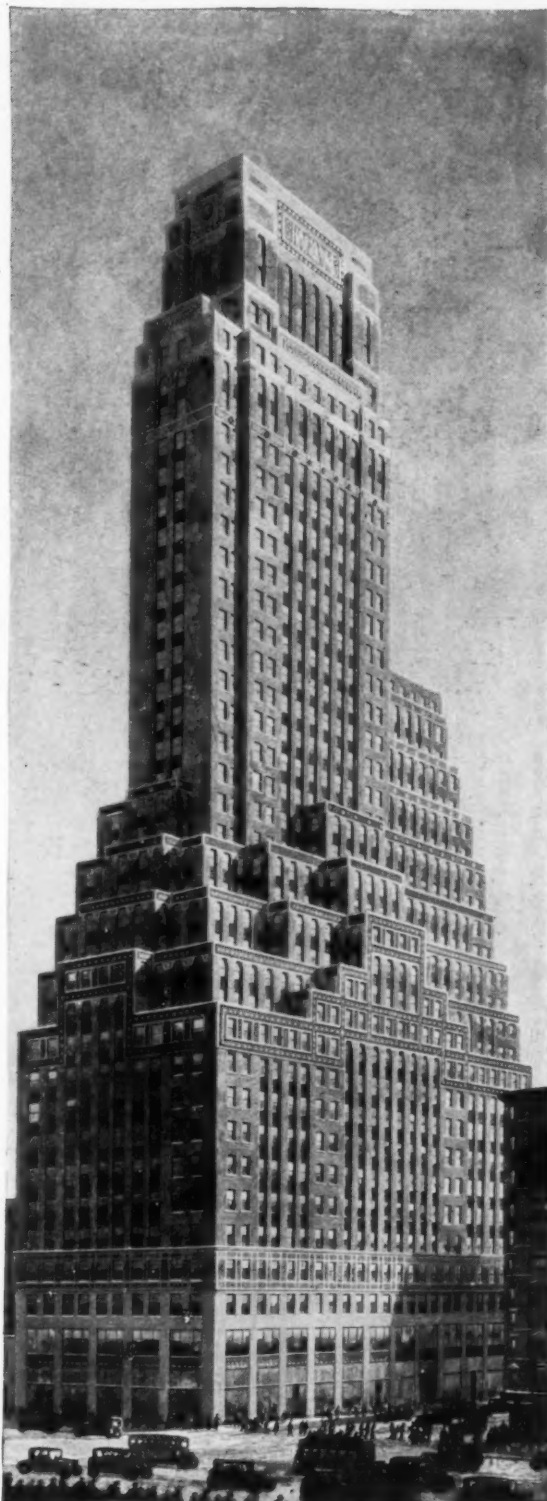
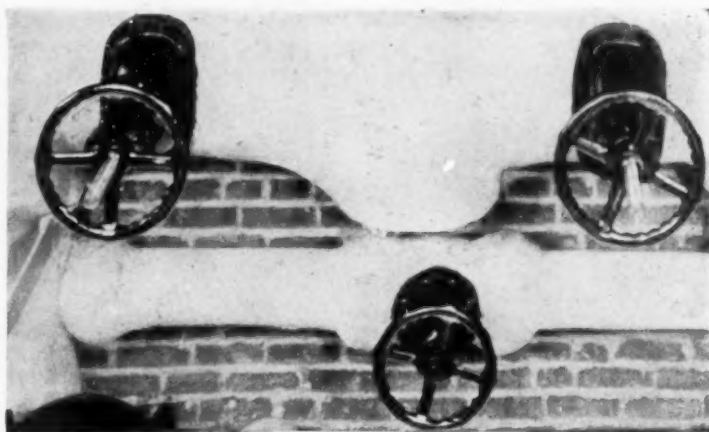
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The Trenton Potteries Company makes but one grade of ware—the best that we can produce—and sells it at reasonable prices. Our ware is guaranteed to be equal in quality and durability to any sanitary ware in the world. The Te-pe-co Trade Mark is found on all goods manufactured by this company and is your guarantee that you have received what you have paid for.



Right: Jenkins Iron Body Gate Valves, and Iron Body Globe Valves on main steam lines, boiler room, Fred F. French Building.

Below: Fred F. French Bldg., 551 Fifth Ave., New York City, Fred F. French Co., Architects, Baker Smith & Co., Heating Contractors, W. G. Cornell Co., Plumbing Contractor.



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The Fred F. French Co. is an organization of investment specialists. And one of the most far-sighted of their investments is the choice of Jenkins Valves for the new Fred French Building on Fifth Avenue, New York.

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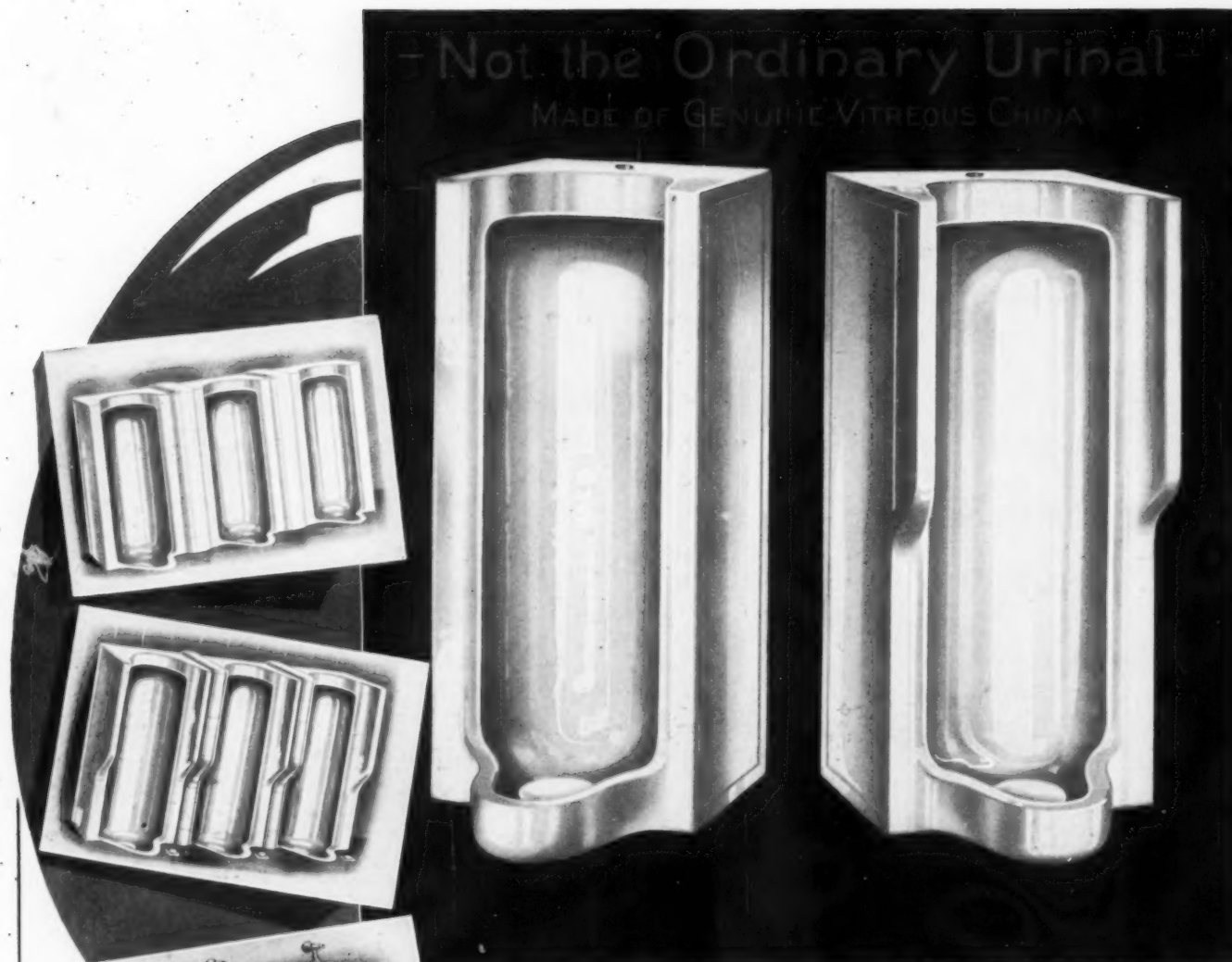
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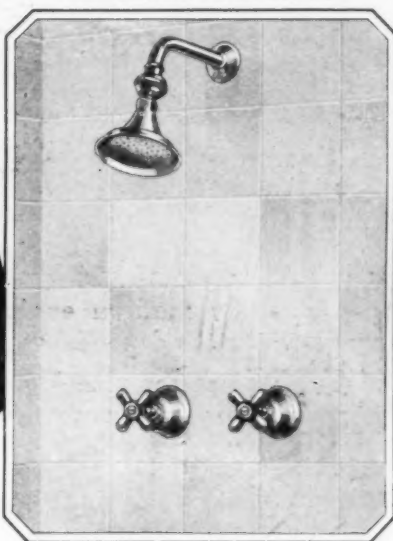
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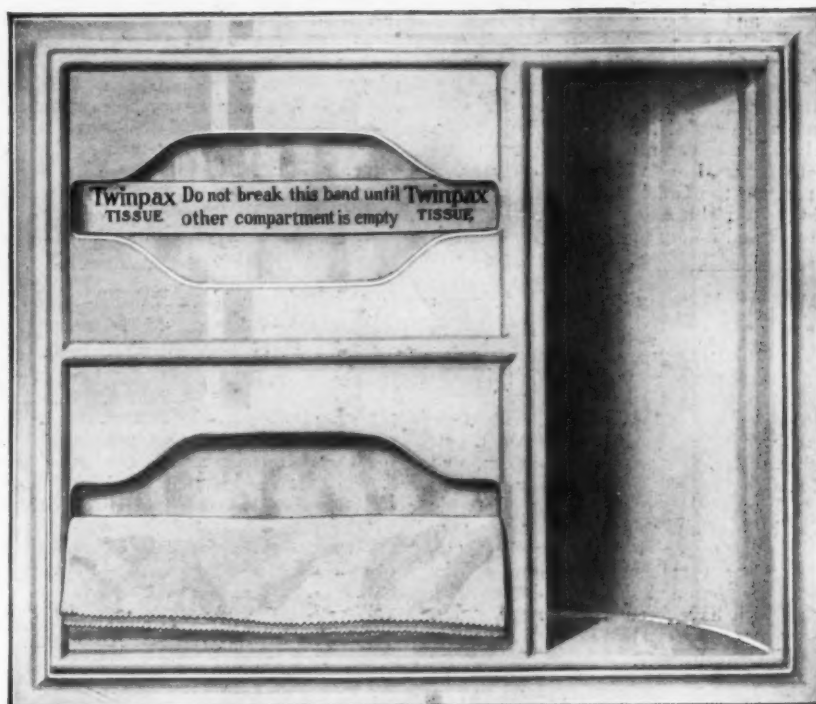
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Architectural Service Division

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Reviews of Manufacturers' Publications

W. H. JOHNSON & SON CO., 203 East 15th Street, New York. "Acme Radiator Shields and Enclosures."

The concealing of heating radiators in ways which do not interfere with their operation is often a matter of some importance to architects and interior decorators. These folders illustrate and describe Acme Radiator Shields and Enclosures, fitted over radiators, preventing walls or draperies from becoming soiled, and aiding in the diffusing of heat by throwing the hot air out into a room. For use with a low radiator the top panel or shelf, which is likely to be used as a seat, is lined with asbestos board to prevent overheating. When it is to be used with a taller radiator, a galvanized water pan running the full length of the radiator is provided to supply proper humidity to the air. The shield or enclosure is to be had in any of the finishes desired.

THE NORTON COMPANY, Worcester, Mass. "Norton Floors; Safe, Durable, Quiet. Vol. 3, No. 5."

The treatment of floors has been so carefully studied that there has been developed a material which is the best and most appropriate for almost every imaginable purpose. Growth in popularity of bathing pools and their being built in large numbers have of course directed attention to study of flooring materials for use with them, and this issue of the Norton Company's bi-monthly house organ covers the use for such purposes of Alundum Ceramic Mosaic Tile in combination with vitreous tile for the new swimming pool at the Worcester Polytechnic Institute. Several illustrations show the excellent appearance of the floors and of the Pre-cast Alundum Aggregate Treads with marble risers to match which have been used on the stairs.

G. & G. ATLAS SYSTEMS, INC., New York and Toronto. "The G. & G. Atlas Pneumatic Tube System."

The noiseless and smoothly functioning service which renders the operation of the large American hotel or department store so notable is due to careful planning in which many elements have been considered. Asking or receiving data from a cashier's or a bookkeeper's office by telephone, for example, when it can be done at all, is far less satisfactory than securing it in written form which leaves no opportunity for argument when responsibility for issuing data must be fixed or some discrepancy straightened out, and change for a guest or a customer can be had far more quickly and easily than by sending a bell boy or a "cash girl" to a distant desk. These are among the reasons for the development of the highly useful pneumatic tube installations in use all over the country, installations fully illustrated and described in this valuable publication. The booklet should be in the specification files of every architect.

THE HOLOPHANE GLASS COMPANY, INC., New York. "Holophane Catalog." A useful booklet on interior lighting.

The most successful lighting equipment is naturally that which gives at the minimum of cost the maximum in lighting efficiency, this last meaning of course the best distribution of the light. Illuminating engineers have devoted their highest skill to solving problems connected with lighting, and so complete has been their success that one wonders if there are further improvements which could possibly be made. The data presented in this publication have been compiled by the Holophane Engineering Department from investigations, study and practice in the illumination field. On request, the authority for any statement or illumination value as shown will be furnished. For this reason, the accuracy of these data may be absolutely relied upon for all practical illumination design work as applied to Holophane reflectors. The Holophane Company believes that the maximum service from any lighting installation requires careful engineering design and planning in advance of the installation of equipment. To this end, the company maintains a competent engineering department which will draw up complete illumination specifications on a lighting project.

AMERICAN LEAD PENCIL CO., New York. "Venus Pencils" and "Unique Thin Lead Colored Pencils."

The importance which is given by constant use is attached to a detail of work as small as pencils, and of particular interest are the folders or leaflets issued by the American Lead Pencil Co. Especially in the drafting room of an architect or engineer, continual use is made of many grades of pencils, from the extremely hard to the extremely soft, and it is often necessary to use pencils of different thicknesses of leads and of various colors, thin colored pencils being much used for marking blue prints, making layout sketches, etc. The folders give full data regarding the "Ever-Pointed" pencil, which of course requires no sharpening, since re-fill leads are used, and they list as well, the different sizes in which the "Venus" eraser is to be had.

INTERNATIONAL HEATER COMPANY, Utica, N. Y. "The International Economy Warm Air Furnace."

The hot air furnace, which was, of course, the earliest of devices for heating an entire building from one source of heat, possesses certain advantages which procure and probably always will procure its wide use. Much of the success with which this type of heating is used depends upon the design and installation of the furnace itself, and this booklet illustrates and describes the "International Economy," dealing with each of its many parts and giving a two-page illustration of such a furnace when duly installed and ready for use. It also gives in full the standard code regulating the installation of warm air heating furnaces in residences, data which are of course of universal value. This brochure should be had by every architect.

PORTLAND CEMENT ASSOCIATION, Chicago. "Town and Country Houses of Concrete Masonry."

That many architects are now fully familiar with the use of what is known as "concrete masonry" is amply proved by countless illustrations appearing in the publications devoted to architecture and building. Some years ago, while the structural value of this type of building was realized, it was felt by many that structures so built presented a certain awkwardness of design—or perhaps a lack of grace and delicacy. It was plainly evident that use of concrete masonry was not fully understood. This booklet proves that such is no longer the case. It is replete with illustrations of residence structures in quite a number of architectural types, notably the Italian and Spanish, built of concrete masonry units and then surfaced with stucco. The houses, designed by a number of well known architects, afford a new idea of the possibilities presented by use of this valuable and important material, particularly for residences.

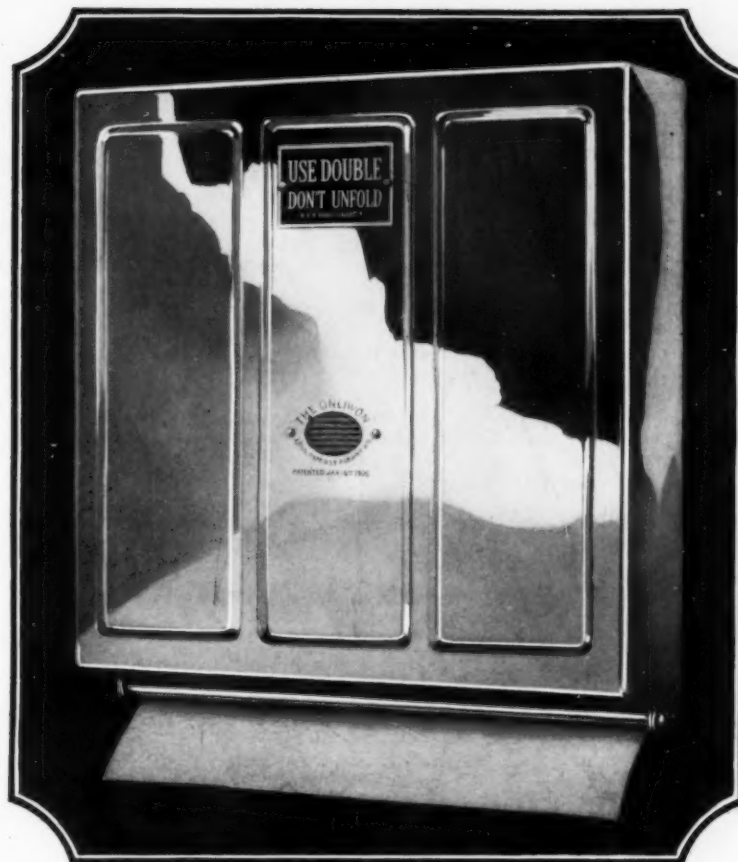
MURPHY VARNISH CO., Newark. "Two Painters, Three Minutes Apart." A booklet concerning a finishing process.

There are buildings of many types which must be obtained from such extremely limited appropriations that every possible device for saving must be resorted to if they are to be built at all. Among the details of building upon which saving is often possible is that of finishing interior woodwork, and this folder is useful in giving data regarding a material which by completely finishing woodwork in one operation makes possible saving of both material and time. "One painter applies a coat of Murphy Brushing Lacquer—say, a silver gray or mahogany—to the woodwork. A second painter follows him in three minutes and rubs off the Lacquer across the grain with tow or burlap. The three minutes' wait does not allow the brushing Lacquer to dry thoroughly, but gives it time to penetrate deeply into the softer portions of the grain. The harder portions do not absorb the Lacquer and are wiped clean. The result is a smooth, impervious stain finish of remarkable beauty, showing the grain. The surface is dry to the touch in five minutes, and ready for use in an hour or so. If desired, a coat of clear brushing Lacquer may be applied a little later.

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Reviews and Announcements

DETROIT STEEL PRODUCTS CO., Detroit. "Built-in Daylight with Fenestra Steel Window Walls."

The increased attention now being paid to giving some degree of architectural dignity to structures intended for factory purposes has brought about the wide use of steel window sash, although much of this increased use has also been due to the utilitarian value of the sash in making possible better light and ventilation. This small brochure deals with the use of steel sash, and it illustrates, describes and lists such details as may be reasonably expected to be had from stock. It also gives data likely to be needed when use must be made of specially designed sash or the details and fittings for them. Particularly useful are the instructions as to the actual installation of these windows in structures built of different materials,—of hollow tile, for example, since practically all tile manufacturers make joint and lintel blocks especially grooved for steel sash, as well as special sill units, which are frequently required.

THE NATIONAL LIME ASSOCIATION, Washington. "Out of the Mud with Lime—Bulletin 317."

The importance of lime in the modern world is great. As with various other spheres of effort, the manufacturing and marketing of lime have been organized, systematized and correlated, and the different "bulletins" issued by the National Lime Association are accepted as the official publications of the industry. This particular bulletin deals with the use of lime for roads. It discusses the types of lime required for the purpose, the necessary qualities of such lime, and the quantities likely to be required for building roadways of different depths and widths. Many of the Association's bulletins have a distinct value to architects and builders, such as those entitled: "Lime and Lime-Cement Brick Mortar"; "Watertight Concrete"; "Whitewash and Cold Water Paints"; "Lime Stucco"; "Building Code Requirements for Lime"; and "Standard Specifications for Lime Plaster." All these publications are easily to be had.

ARMSTRONG CORK & INSULATION CO., Pittsburgh. "Refrigerated Drinking Water." Frequent necessity of its use.

Provision of filtered and refrigerated drinking water throughout buildings of many types has made rapid strides during the last few years. In structures of certain kinds it is very nearly as important as the circulation of hot water, which of course is universal. Take for example, a hotel where a guest must either drink water from the bathroom faucet, water often tepid by reason of the nearness of the cold water pipes to those carrying the hot, or else call for a bell boy who after a time brings in the old fashioned pitcher of "ice water." A far better and vastly more economical method of supplying drinking water is made plain in this booklet, a method now widely adopted not only for hotels, but for mills, factories, hospitals, schools, institutions, public buildings, office structures and stores. The careful insulation of the supply pipes conserves the coldness which makes the water palatable and use of the system practicable.

ADD-A-UNIT PARTITION CO., Chicago. "Catalog No. 35, Showing Add-A-Unit Partitions." For subdividing areas.

Modern business of almost every kind requires areas of one sort or another which must be given seclusion or retirement. In banks it is necessary that cashiers, tellers, accountants and certain officials be given privacy and sometimes protection; physicians and other professional men find it necessary to have rooms for consultations; and business of nearly every sort makes much use of private offices. Often, indeed, an entire floor of a large loft or office building must be divided up to serve different departments and many executives, and all this involves use of partitions which are not parts of a building's structure, but movable so that they may be moved when necessary. This well produced brochure is one result of 35 years' experience upon the part of the Add-A-Unit Partition Co. It illustrates and describes the portable partitions of different kinds made by the company, and equipment plans and detailed drawings show the method of their construction.

ELECTROL INC. OF MISSOURI, St. Louis. "The Oil Burner with the Master Control." An important detail.

The advantages of using oil as fuel for heating are so apparent that little study or investigation is required for recognizing them. Among the many, however, there are a few which might be singled out for attention. First of all, there is the possibility of securing *even* heat, so even in fact that the temperature of a house need not vary more than a few degrees during an entire winter. Then too, by use of thermostatic control the temperature may be varied at will and without personal attention. Then again, since oil requires but little in the way of storage area, and that little generally outside of a house, the valuable basement area often given up to storage space for coal is made available for other purposes,—an advantage which possesses considerable appeal to architects. This important brochure, replete with data on a valuable type of equipment for using oil as fuel, gives information on every detail probably needed.

BRYANT HEATER & MFG. CO., Cleveland. "Handbook on Heating Buildings with Bryant Gas Boilers."

For use in localities where supplies of natural gas or the prices demanded for manufactured gas render them possible, there is nothing in the way of heating equipment more desirable than gas-fired boilers. The advantages of gas as fuel are numerous, for it requires no space for storage, does not have to be handled, and a boiler so fired demands no attention when once the flame has been started,—these three advantages being among the many. This brochure illustrates and describes the fine line of boilers supplied by the Bryant Heater & Mfg. Company, boilers of all sizes and capacities, from the extremely small, useful for heating a "small house in which insulation has been employed to the fullest extent, or as an auxiliary to heat an obstinate corner of a warm-air-heated house," to larger sizes calculated to meet heavier demands. The brochure is replete with data for calculating the sizes of boilers, whatever the gas.

S. Grant Alexander announces his change of address from the Chamber of Commerce Building to 113 College Street, Asheville, N. C.

For Rent. Part of room with north light and use of drafting board. Beatty & Beatty, Landscape Architects, Room 1725, 101 Park Avenue, New York.

Announcement is made by George R. Mann, Harry D. Wanger, and L. Milton King, former members of the firm of Mann & Stern, of the formation of the firm of George R. Mann, Wanger & King, with offices in the Donaghey Building, Little Rock.

The advertisement of the American Seating Company, page 83 of THE FORUM for September, 1927, contained several illustrations of the interior of Emmanuel Church, La Grange, Ill. Credit for the designing should have been given to Marshall & Fox and John N. Tilton, Associated Architects, and to the Bertram Grosvenor Goodhue Associates as Consulting Architects.

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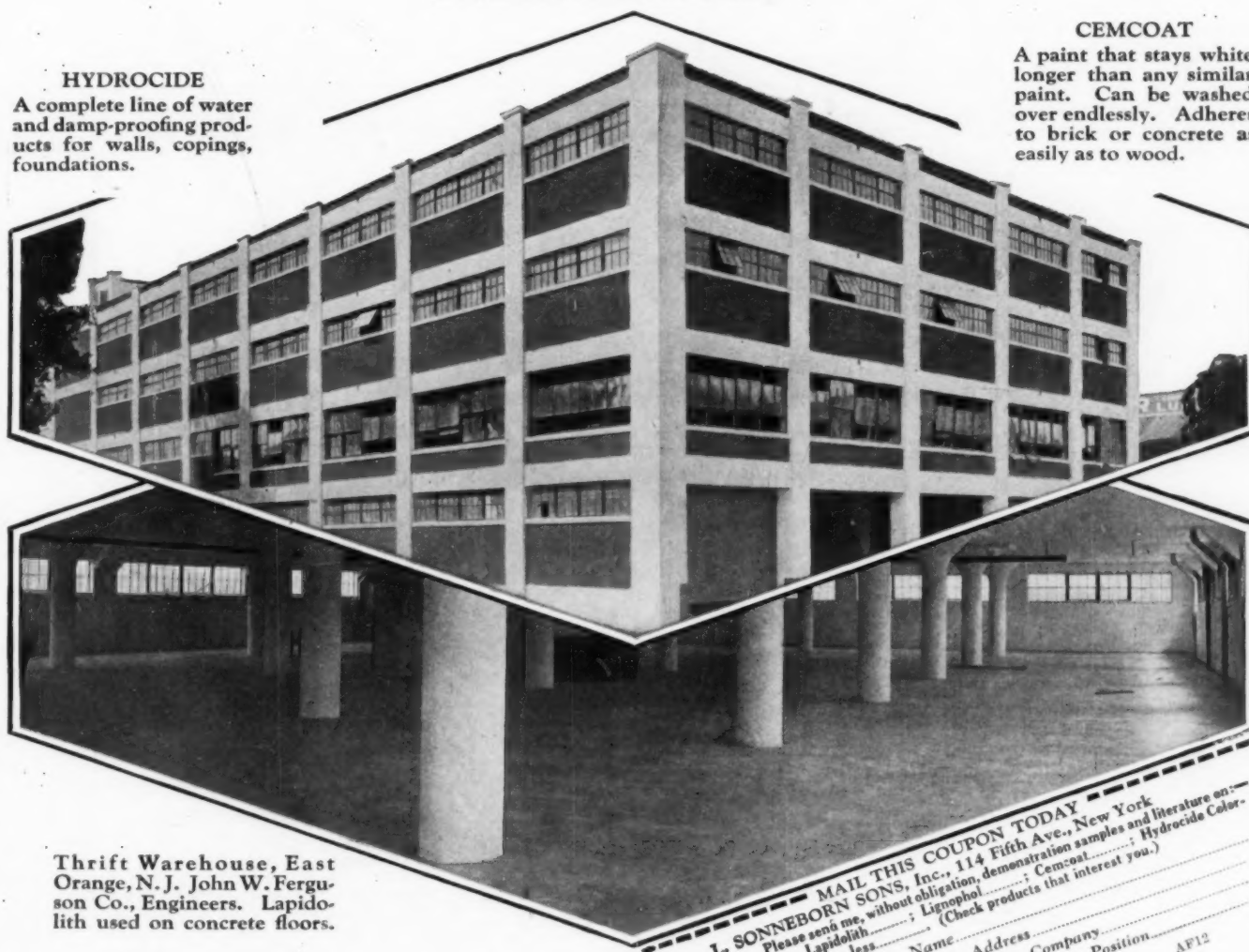
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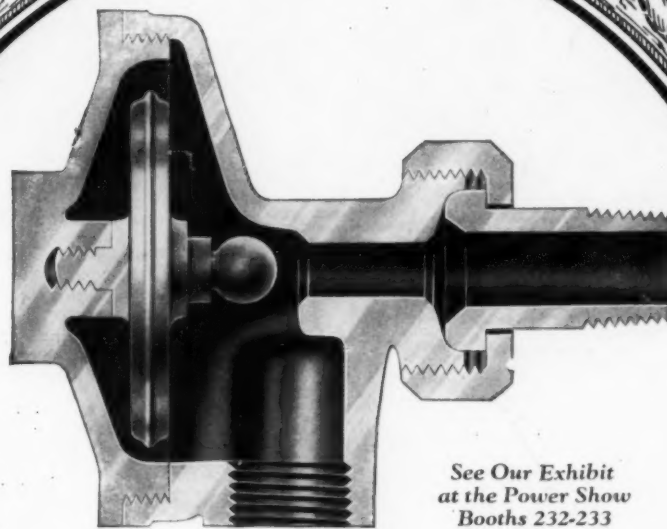


Thrift Warehouse, East Orange, N. J. John W. Ferguson Co., Engineers. Lapidolith used on concrete floors.

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ordinarily used on low pressures, but built strong enough to operate on pressures up to 100 pounds without damage to the sensitive diaphragm

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—a moderate, healthful heat during mild weather, avoiding overheating common to ordinary steam jobs.

—all the heat you want in winter weather by adjusting firing periods.

—operation four-fifths of the time with banked fires.

—easy control of room temperatures.

—a remarkable fuel economy.

—durability of apparatus.

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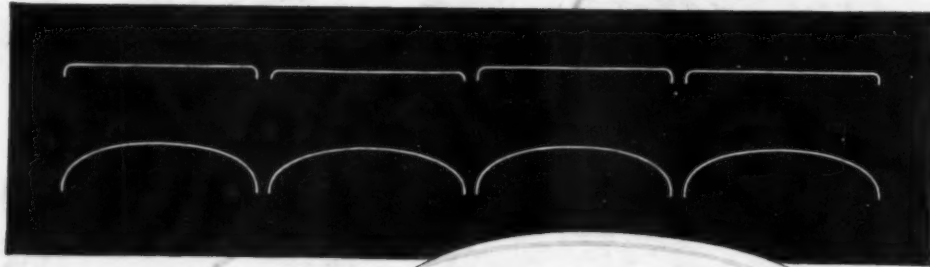
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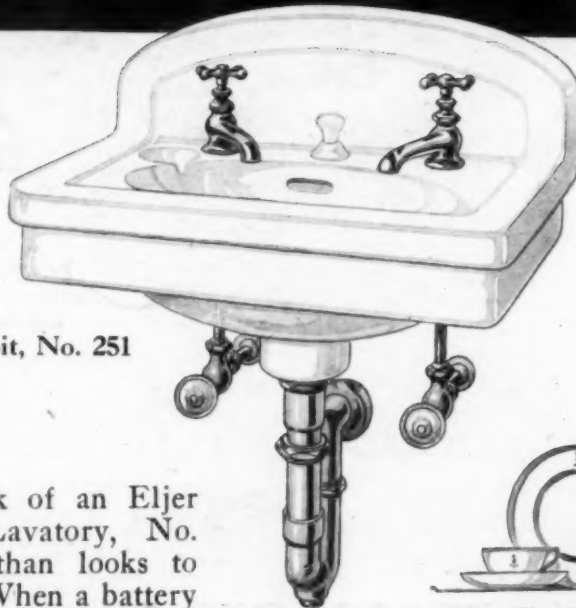
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This graph demonstrates visually the value of Eljer "curved top" lavatories in battery installations. The tops of the straight backs are clearly out of alignment. The high points of the curved backs are equally varied—but the eye is outwitted by the curve. The curved top is another safeguard to a satisfactory installation.



New Detroit, No. 251

THE curved back of an Eljer New Detroit Lavatory, No. 251, has more than looks to recommend it. When a battery installation is to be made, it's the best guarantee of satisfactory alignment one could wish!

Given straight top backs as shown in the upper graph, the slightest discrepancy in height of backs shows up like the irregular top of a fence silhouetted in the moonlight. A quarter-inch variation isn't much to the Eiffel Tower, but it's too much on a battery of lavatories.

But the curved back—there's the trick! The eye cannot estimate how high or low the high-points are, and a uniform end-to-end battery is the visual result.

Look over the New Detroit design and note its features: Oval basin, anti-splash rim, integral depressed soap holder, integral back with hangers concealed. Made of the finest Eljer vitreous china that ever came out of a kiln, pure white and harder than rock. It's a fixture to delight the heart of any man who appreciates fine work.

The Eljer catalog has the New Detroit and many others, fully described. *And Eljer on-the-job deliveries help to smooth away wrinkles from furrowed brows.* If the brow is already furrowed, send for the Eljer catalog as the first step toward a cure. Eljer Company, Ford City, Pa. Plants at Ford City, Pa., and Cameron W. Va.

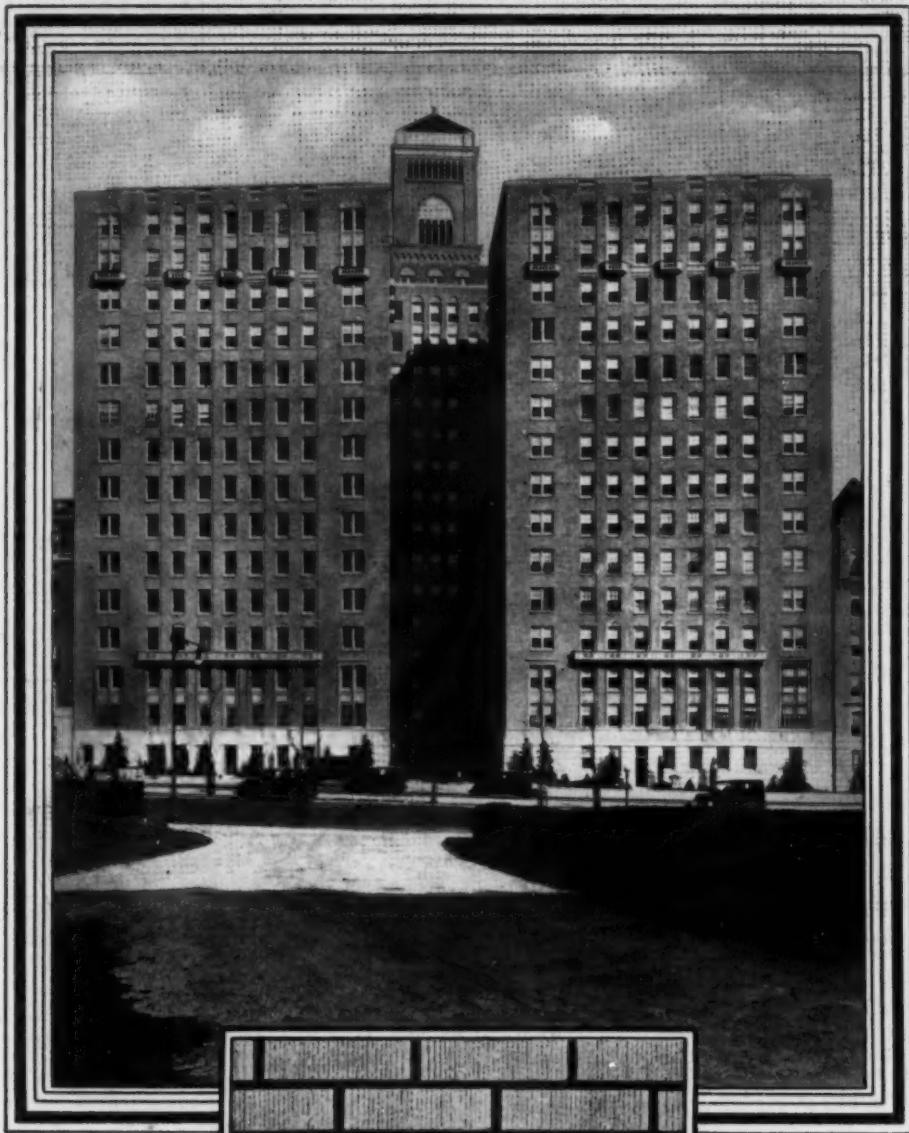


Eljer China is similar in texture to the finest French Table China—But with the added toughness necessary to withstand rough usage. Acidproof and rustproof.

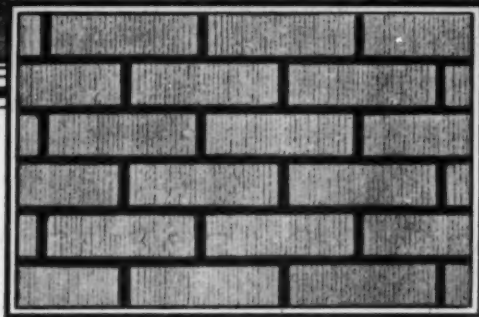
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VITREOUS CHINA PLUMBING FIXTURES

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